

ARCHIVES OF OTOTOLOGY.

CIRCULATORY DISTURBANCES FOLLOWING LIGATION OF THE INTERNAL JUGULAR VEIN IN SINUS THROMBOSIS; WITH REPORT OF A CASE.¹

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CASE. Boy, aged nine years; scarlet fever five years ago, followed by left otitis media purulenta; after subsidence of which, fair-sized dry central perforation of membrana tympani, which had discharged several times, and then would become absolutely dry, and so remain for several months at a time.

On March 8, 1905, slight pain, redness, and tenderness over mastoid, accompanied by very profuse discharge. Temperature 100° F., vessels of left optic disk rather full. Admitted to Newark Eye and Ear Infirmary for operation. Following day all mastoid symptoms had disappeared, discharge much less, follicular tonsillitis, although no complaint of throat. Perfectly well in three days. Five days later (March 17th), sudden dizziness and rise of temperature to 104° . Ear discontinued discharging; no tenderness over mastoid. Temperature rapidly fell again to normal, and patient appeared to be perfectly well. Same sudden rise of temperature repeated on following day, when again admitted to Infirmary. Following day temperature 104° , which fell in five hours to 100.2° , and rose again in five hours to 103.4° , and again fell in six hours below normal, 98.1° .

Blood examination showed numerous plasmodia malariz. Quinine given in large doses, nevertheless on following day again a sudden rise.

During this time three things were noticeable: First, the

¹ Read before Section of Otology, N. Y. Acad. Medicine, Jan. 11, 1906.

excellent condition of the patient, he insisting at all times that he was perfectly well ; objected strenuously against being confined in bed, and, despite the sudden changes in temperature, only complained twice of dizziness and "feeling tired."

Second, the absence of chills, although the nurse on one occasion, during a rise of temperature, noted a very slight and transient blueness of the lips.

Third, the complete absence of all mastoid tenderness.¹

Operation, March 21st.—Mastoid absolutely normal ; no bleeding from diploic veins. Sinus exposed at knee : normal appearance, but blackened well down towards bulb, and small opening in wall very low down through which drop of pus oozed.

Jugular ligated, and this immediately followed by a profuse flow of blood from upper wound, both from soft parts and bone. On passing probe into opening in sinus, profuse hemorrhage, which was not controlled by pressure from above. Free bleeding thought to come from below. Firm tamponage necessary to control hemorrhage.

Following day general condition good, but *marked double optic neuritis, although none had been present one-half hour prior to operation*; chilly sensation, rather restless.

March 23d.—Temperature 100° – 103.4° ; pain in back of neck on moving eyes ; retinal veins enormously dilated and tortuous, arteries small. Numerous hemorrhages in retina. Blood pressure 130mm. Ether given ; again very profuse hemorrhage, supposed to come from below as well as above. Very firm tamponage necessary to control.

March 27th.—Intense optic neuritis. General septic condition: temperature 102° – 104° ; chill; *veins over whole of scalp and upper part of chest very much distended.*

March 29th–30th.—Delirious at times ; great restlessness ; temperature 99.3° – 105° .

March 30th.—Ether given; whole length of sinus split; bleeding from below found to come from enlarged emissary entering very low down towards the jugular bulb.

Whole of ligated jugular excised, the upper portion being bathed in pus, the portion below the ligature filled with a firmly organized non-septic clot which extended downwards behind clavicle.

¹ In a general way the case fits the type of primary jugular-bulb thrombosis in infants, described by McKernon, *Trans. Am. Otol. Soc.*, 1905.

April 1st-5th.—Almost constantly delirious, sang a few bars of a doggerel song over and over again; involuntary urination; pulse irregular; great restlessness at times; temperature 99.2°-102.4°; apparently has meningitis.

April 7th.—General condition very much improved, but can see very little, only able to count fingers at few feet. The enlarged veins in the scalp have felt like irregular cords under the finger, as if filled with firm thrombi, but now are gradually disappearing. Has had two lumbar punctures during past week. Fluid clear, under pressure, microscopical examination negative, first puncture apparently improved vision somewhat. Great difficulty has been experienced in changing dressings because of the hemorrhage which succeeded any disturbance of the firm packing.

April 10th.—Totally blind; pupils dilated, no reaction to light. All pressure removed from sinus; veins in scalp gone.

April 28th.—Suddenly in the middle of the night, while sleeping, profuse venous hemorrhage.

April 29th-30th.—Very free discharge of clear cerebro-spinal fluid, escaping from small opening in inner wall of sinus. Dressings soaked several times daily.

May 4th.—Hernia cerebri. During the next month, symptoms of cerebellar abscess, irregular projectile vomiting, vertigo, loss of co-ordination of left side of both arm and leg, but chiefly of arm. Deviation of tongue, but no loss of flesh.¹

During this time the cerebellum was twice explored; nothing found.

June 6th.—Rapid rise in temperature; delirium; inability to swallow; collapse; death.

Report of Autopsy, by Dr. Charles Teeter:

"Nothing abnormal was noted over the surface of the brain. The optic nerves and vessels were cut and the medulla divided and the brain lifted out. It separated easily except at the site of the hernia cerebri, which was the left side of the cerebellum.

"On opening the sinuses, the left lateral, the torcular, the inner one-fourth of the right, nearly the whole of the superior longitudinal, were all thrombosed. The cavernous and the petrosals were normal.

¹ This argued very much against the existence of an abscess, as in my experience recent cerebellar abscess is invariably associated with rapid loss of flesh.

"The hernia cerebri involved nearly the whole of the left lateral lobe of the cerebellum; extending from it was an area of softening involving the left lateral portion of the pons.

"Two specimens were taken for microscopical study, one the lateral portion of the pons and the other the medulla. The specimen taken from the medulla, on cross-section in its upper part, showed in the median line of the floor of the fourth ventricle a hemorrhagic area extending inwards and slightly to the left. The floor of fourth ventricle showed microscopically extensive round-celled infiltration. Medulla: Both specimens show evidences of rather extensive meningeal inflammation."

Examination of the wet specimen of this dura several months later showed the free right lateral sinus to be only about one-half the size of the thrombosed left lateral sinus. No measurements of the size of the jugular foramen were made.

This unfortunate case possesses many points of interest, chief among which are the great disturbances in the cerebral circulation, following the ligation of the jugular, as evinced by the profuse bleeding from the mastoid wound, and the immediate appearance of an optic neuritis of an intense type.¹

The failure to relieve the sepsis even after the second operation was due to inability to manipulate the lower end of the sinus, because of severe bleeding, and the locking in of the septic material by the firm tamponage necessary for its control.

The non-septic thrombosis of the superior longitudinal sinus and the accompanying meningeal symptoms were caused by a stagnation of the blood in the sinus, while the secondary hemorrhage and the escape of cerebro-spinal fluid and development of large hernia were the result of increased pressure and weakening of the dura, through the firm and prolonged tamponaging.

All the conditions thus were, either directly or indirectly, attributable to the sudden disturbances in the cranial circulation by the ligation of the jugular.

¹ The whole subject is very fully and critically reviewed by Schultze: "Über die Gefahren der Jugularisunterbindung und des Sinusverschlusses bei der otogenen Sinusbose." *Arch. f. Ohrenheilkunde*, Bd. 59, S. 216.

It is to this phase of the subject that I wish to call attention.

There was a great mistake made in the handling of this case, viz: the ligation of the jugular, a procedure which is advocated by a majority of surgeons, especially when the bulb or the lower end of the sinus is involved.

In the early days of renal surgery, after the removal of a kidney, a few patients died without having passed urine, and the operators were greatly chagrined at finding, at post-mortem that the kidney that had been removed, although diseased, was the only one present.

The number of such cases will never be known. To-day such a mistake would be inexcusable. And I think it is time that otologists, in view of past experience, cease to advocate and practise the ligation of the jugular in *all* cases of septic thrombosis, without taking all precautions possible to be sure that it will not too seriously upset the cerebral circulation. Furthermore, if ligation is performed, its method and site should have this possibility in view.

I am convinced that such disturbances are not as infrequent as would appear from the scant literature on the subject, due either to omission to report them, or, what is much more probable, failure on the part of the surgeon to recognize the condition, associated as it is so frequently with symptoms indistinguishable from those of meningitis.

What evidence have we that the jugular ligation is attended with danger?

Rohrbach (Bruns, *Beitr. z. klin. Chir.*, vol. xvii., p. 811), in a collection of ninety-one cases of ligation for various conditions, found six presenting symptoms of circulatory disturbances, such as swelling and œdema of the soft parts, with cyanosis of the face, four severe headaches, and three deaths, undoubtedly due to disturbances in cerebral circulation.

G. Fischer observed headache and hemiplegia, which later subsided.

Asmus reports convulsions and opisthotonus lasting twelve minutes.

Winthrop Mitchell, of Orange, N. J., in an unreported case,

observed delirium and unconsciousness, which continued for several days, but completely disappeared.

Berard (*Bull. d. l. soc. chir. de Lyon*, Feb., 1905) reports œdema and swelling of the neck and face.

Richards (*ARCH. OF OTOTOLOGY*, 1905, vol. xxxiv., p. 419) observed transient mania in one case and a secondary papillitis in another.

Rohrbach (Bruns, *Beitr. z. klin. Chir.*, vol. xvii., 1896-7, p. 813) reports a continued semi-comatose condition following the operation for six days, and death. Post-mortem showed the transverse sinus and the jugular of the unligated side had a lumen of the size of a needle and of a quill respectively. In the middle of the right frontal lobe was a softened area of the size of a five-mark piece, and a like spot, the size of a two-mark piece, in the left second frontal convolution; the surface of the brain was also covered with numerous smaller areas, chiefly in the central convolution.

Linser (Bruns, *Beitr. z. klin. Chir.*, vol. xxviii., p. 642) observed delayed return to consciousness for five hours, although relatively a small amount of ether had been given; later, apathetic condition, difficulty in breathing; slow, irregular pulse; slight facial œdema, cyanosis, and death in deep coma on the following day. Autopsy showed hyperæmia and œdema of the brain, the capacity of the ligated jugular being ten times that of the unligated, and while the transverse sinus of the ligated side was of good size, that of the unligated was very small.

Kummer's (*Revue de chirurgie*) patient never came out of the ether; rapid pulse and breathing; death five hours after the operation. Autopsy: Œdema of the brain from effusion from venous hyperæmia, also multiple small hemorrhages and extravasation of blood in ventricles.

Grunert's (Schultze, *Arch. of Ohrenh.*, vol. lvii., p. 29, case Leps) patient never came out of narcosis; slow, strong pulse; difficult breathing; pupils contracted. Later, extreme dilatation of pupil, loss of corneal reflex, and death one hour after operation. Autopsy: Layer of blood covered the whole of the left convexity between the dura and the arachnoid. Infiltration (hemorrhagic) of the brain around the central convolutions.

Hölscher (*Arch. für Ohrenheilk.*, vol. lii., 1901, pp. 111-129). Slow pulse, headache, very severe bleeding from the wound at operation. Three successive operations on second, twelfth, and

twenty-first days respectively. Right pupil dilated, probably the effect of small abscess that was found at post-mortem. Death the result of thrombosis of the superior longitudinal sinus and brain abscess, the patient having recovered from the immediate disturbance of the cerebral circulation.

Grunert (Schultze, case Bosse, *Arch. f. Ohrenheilk.*, vol. lix.): after ligation and obliteration of right jugular and sinus, accidental injury of left sinus, necessitating firm tamponage to control hemorrhage, immediately followed by weak, rapid pulse, labored breathing, pupils widely dilated, unconsciousness alternating with screaming fits which lasted for thirty hours, succeeded by partial unconsciousness for three days, and then a return to normal condition; death from acute tuberculosis later, the post-mortem showing that the left sinus as well as the right had been entirely obliterated by a clot.

While Jensen reports a case of injury to the sinus of the unoperated side, after ligation of the jugular and occlusion of the opposite sinus, with recovery (*Arch. f. Ohrenheilk.*, vol. xxxv., p. 278), and Dangel (Bruns, *Beitr. zur klin. Chir.*, 1905, vol. xlv., p. 495) reports a case of double jugular ligation with only very transient symptoms, he admits, however, that the occipital veins were very large, and both jugulars had been gradually compressed by a tumor prior to ligation.

The post-mortem findings in the rapidly fatal cases following ligation for conditions outside the skull, are general œdema of the brain, with hemorrhages, and later softenings, while in the very few cases in which the jugulars themselves were investigated, the ligated one was found to be of large size, with a small one on the opposite side.

Hemorrhages into the brain and œdema have been frequently observed in fatal cases of sinus thrombosis. Is it not possible that in some of these death was, in reality, due to obstruction of the venous return, the size of the vessels escaping notice?

Dench (*Trans. Am. Otol. Soc.*, 1903, p. 217) reports a case of death from serous meningitis, softening of the cerebellum, and a hemorrhage into the spinal cord, following ligation.

Panse (*Arch. f. Ohrenheilk.*, vol. xxx., p. 54) reports a case of sinus thrombosis, in which the post-mortem examination re-

vealed hemorrhages into the brain, and hemorrhagic softening of the brain substance. In the occipital lobe an area of 7cm filled with hemorrhages, which area extended to temporal lobe. Corpus callosum and striatum infiltrated with hemorrhages.

Streit (*Arch. f. Ohrenheilk.*, vol. lvi., p. 193, 1902): Thrombosis of both lateral sinus and right jugular bulb; softened area in the cerebellum; hemorrhage over the left hemisphere; meningitis and death two days later, without regaining consciousness.

What evidence have we demonstrating the likelihood that one of the jugulars may be too small to furnish a sufficient flow of blood from the head?¹

Linser, in an examination of 1022 skulls, found in 29, or 3 per cent., the jugular foramen so contracted that the vein passing through it could not have been more than $\frac{3}{4}$ mm in size. Of this 3 per cent., $2\frac{1}{2}$ per cent. occurred on the left side and only $\frac{1}{2}$ per cent. on the right side.

Cunningham states (p. 904) the internal jugular vein is sometimes smaller or larger than normal. In either case, compensating changes in size occur in the lateral sinus and the internal jugular vein of the opposite side, or in the external and anterior jugular of the same side. One lateral sinus may be absent or very small.

Knott (*Journal of Anatomy and Physiology*, 1882, vol. xvi., p. 31) states: "The right lateral sinus is very generally the larger, but I have myself met with two instances of its almost complete absence, only a small venous canal $1\frac{1}{2}$ mm diameter following its course as far as the mastoid foramen, through which it disappeared. In four cases out of forty-four carefully examined, the superior longitudinal turned directly into the right lateral, which appeared to be a direct continuation of the other. In these cases the left was only about one-third the size of the right lateral sinus."

Lieutand has recorded a case of complete absence of the left lateral sinus. McEwen, Körner, Streit, and Panse all record left lateral sinuses so small as to be practically absent. Kasloff and Dumont both observed a jugular foramen hardly large enough to

¹ The whole literature of anomalies of the cerebral sinuses is reviewed by Streit, "Ueber otologisch wichtige Anomalien der Hinsinus, über accessorische Sinus und bedeutender Venenverbindungen." *Arch. f. Ohrenheilk.*, vol. lviii., pp. 85-167.

admit of the passage of a probe; Bairkow, a jugular foramen of 2.2mm.

In an examination of seventeen skulls, I found the jugular foramen almost entirely absent in one, and in two others greatly contracted by septa.

Zuckerkindl found a right jugular eight times the size of the left; Biddle, a contracted left jugular foramen, and the right so small that a bristle could hardly be passed through it, but the right mastoid foramen was 1cm in size. In most of the cases in which the jugular is small, the mastoid foramen is large, and in a few cases the transverse sinus goes through it.

With such abnormalities, why are circulatory disturbances almost unknown in sinus thrombosis, for as yet there is no record of a death from this cause, although literature reports at least six deaths from ligation of the jugular for conditions external to the skull?

In the latter, if the jugular ligated happens to be the large one, while the opposite is very small, the collateral venous circulation being suddenly called upon to carry an excessive amount of blood, causes a sudden storing of it within the cranial cavity, which storing may be followed by œdema, or hemorrhage, and perhaps death. A thrombus, on the other hand, is of slow growth, thus giving the sinuses and the numerous smaller veins ample time to adjust themselves for the extra amount of blood which they must carry, so that when the thrombus *does* completely occlude the vessel, little or no disturbance occurs.

Two symptoms were present in the case reported, which should make us suspicious of cerebral venous "storing," viz: severe bleeding from the diploic veins and optic neuritis.

Prior to ligation, the absence of bleeding should have made us suspect that the thrombus was not completely occluding the sinus, as it has been my experience in all such cases, especially if operated early, that free persistent bleeding from the diploic veins is a prominent feature, the reason being that by the occlusion these generally little-used vessels and spaces are now fully distended in the attempt to relieve the dammed-up blood in the sinus. The observation regarding

persistent venous bleeding has been made by operators in cases of increased intracranial pressure, but its importance in assisting to diagnose an occluding thrombosis prior to the opening of the sinus has not been called attention to as far as I am aware. In one case of persistent bleeding from the diploic veins, opening the sinus gave, apparently, free bleeding from both above and below, thus excluding, as was thought, a thrombus. The patient died of pyæmia with multiple metastases, and, although an autopsy was not performed, there can be no doubt but that he had a septic thrombosis of, or near to, the jugular bulb.

The second important symptom of venous storing was the rapid appearance of choked disks immediately after the ligation.

Since Kipp (*Trans. Am. Otol. Soc.*, 1890) directed attention to the importance of optic neuritis as an indication for opening the mastoid, the condition of the fundus has been carefully observed in cases of suppurative otitis, nevertheless it is only recently that the experiments of Cushing and Kocher (*Am. Jour. Med. Soc.*, 1902, p. 375) have demonstrated choked disks to be due to increased intracranial pressure, accompanied by an obstruction of the venous outflow of blood. In these experiments the effect of regulated mechanical pressure on the cerebral circulation was directly seen through a glass window in the head of the animal operated on.

The circulatory disturbances were, first, with slightly increased intracranial pressure, a narrowing of the venous channels. During this stage the symptoms, in the main, were insignificant. If now the pressure was further increased, the venous narrowing gave place to venous stasis and hyperæmia of the cerebral veins. This was associated with choked disk and symptoms of cerebral irritation—headache, vertigo, restlessness, tinnitus, and delirium.

Clinically we have exactly this condition produced by the occlusion of the sinus by a thrombus, or the ligation of the jugular, if the other venous channels are not large enough to take care of the outflow. This explains the varying degrees of the frequency of optic neuritis in the different

pathological lesions, its frequency in sinus thrombosis both before and after operation, in brain tumor and abscess, and its infrequency in meningitis, in all of which latter conditions the intracranial pressure itself must be raised to a high degree in order to produce a vascular condition, which is the primary one in sinus thrombosis. That this is the correct view is further proven by the infrequency of optic neuritis in cavernous sinus thrombosis, where, while there is a much greater *local* storing of blood, there is a much less general cerebral "storing." In one case of cavernous sinus thrombosis observed by me, no optic neuritis occurred.

During recent years I have seen in the work of Drs. Kipp, Seidman, and myself seventeen cases of sinus thrombosis, optic neuritis occurring six times, or thirty-five per cent., in one of which it followed ligation; while in an examination of twenty-nine consecutive cases of epidemic cerebral spinal-meningitis at the Newark City Hospital, optic neuritis occurred but three times, or about ten per cent. Crockett, in seven cases of thrombosis with ligation, noted optic neuritis in four, in two of which it followed ligation; while Sprague refers to a case of total blindness from optic neuritis in a case of thrombosis. Richards records but one case following ligation.

In view of these facts, I think that it is fair to infer that in all cases of sinus thrombosis, the presence of optic neuritis should warn us that the return venous flow is already seriously obstructed, and cause us to be exceptionally careful to add as little further obstruction as possible by our surgical manipulations.

Theoretically there are certain conditions possible in sinus thrombosis which may make the ligation of the jugular dangerous by preventing the return circulation, viz:

When the thrombus does not entirely occlude the sinus, or when the thrombus does not extend fully down to the bulb, the inferior petrosal and condyloid being still patent. In either of these conditions, the ligation may cut off the main return venous channel, as in the case here reported.

When the external jugular is ligated during the operation, a very frequent occurrence because of its course. By this

accident one of the now most important venous channels is destroyed.

When the ligation of the jugular is below the facial, or the facial itself is ligated; a common occurrence. If now several of these occur, and they may all occur, then if the opposite jugular is of small size, cerebral disturbances are apt to follow.

What means can we take to prevent a disturbance of the return circulation?

First, before ligating the jugular, by first making as large an opening as possible in the sinus wall, and beginning this opening as far down toward the bulb without attempting to remove the clot, thus avoiding the possibility of mistaking a parietal for an occluding thrombus, and at the same time reducing to a minimum the probability of disseminating the thrombus.

Second, if the thrombus is, as in the case here reported, situated so low that this is impossible, then the application of a temporary clamp, such as Crile clamp for temporary compression to the carotid, and if now there is no extra bleeding from the diploic and other small veins it is fair to infer that the circulation has in no ways been disturbed.

Third, by not injuring the external jugular in ligating; and,

Fourth, by ligating above the entrance of the facial whenever there is not a positive indication for a lower site being chosen.

OTITIS INTERNA SINISTRA HEMORRHAGICA (?);
VICARIOUS MENSTRUATION (?).

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Mrs. J. Sh., thirty-three years of age, consulted me on November 1, 1905, and gave the following history: There is no deafness in family; she has been married four years; has no children, had no miscarriage, and never any acute trouble with her ears until August, 1905.

On a Sunday (the date is not remembered by her) the patient partook of a light lunch at 11 A. M.; at two o'clock she took a very hot bath in which she remained 20 minutes. From the bathroom she went to the bedroom and threw her hair, which, however, had not been wetted, over her head in order to comb it, at the same time throwing her head forward. When she raised her head up again she felt very dizzy and nauseated, so that she had to lie down on a lounge for $1\frac{1}{2}$ hours. Then she tried to get up, feeling still somewhat dizzy, but she could get supper ready.

Patient had just finished her menses, which lasted for three days and were scanty as usual. A druggist sent some bromo-seltzer, but patient vomited after having taken it. During the following night she slept well, but did not notice any improvement the following morning. In the afternoon she rested on a lounge, and when she raised her head she noticed for the first time a noise in her ear which has not left her since. The noise resembles escaping steam. The dizziness and nausea lasted until the following Wednesday.

The patient consulted several physicians and, as she says, was treated by massage of the ear and with medicine by one of them. Patient attributes the disappearance of her dizziness to the

medicine (K I). The dizziness had lasted about $2\frac{1}{2}$ months and was especially noticeable when patient looked upward.

Hearing Test.—A watch ordinarily heard at a distance of 100-150 inches is heard at a distance of about 6 feet in the right ear, and in the left ear at a distance of about $\frac{1}{2}$ to $\frac{3}{4}$ inch. (Patient says that she was a little deaf in the left ear for about ten years.) Low tuning-forks are heard in both ears. Hartmann's 4096 tuning-fork is heard in both ears, but not so plainly in the left ear. Blake's 512 fork is heard in the right ear seven seconds by air conduction and four seconds by bone conduction (over the mastoid); in the left ear five seconds by air conduction and four seconds by bone. Weber is localized in the right ear; Galton, probably 0.0, in both ears. The right hammer is slightly retracted; the right drum membrane shows no light reflex; the left hammer shows a marked retraction, and the drum membrane shows no light reflex. Examination with Siegle's speculum shows the lower portion of both drum membranes easily movable and the upper portion of the left drum membrane hardly movable—otherwise normal.

After treatment with Delstanche's masseur and Lucae's pressure probe, the watch is heard in the left ear at a distance of about $\frac{3}{4}$ to 1 inch.

Nov. 9, 1905.—Gellé's test with Hartmann 128 fork. Right ear, positive; left ear, negative.

Nov. 27.—She reports that she felt very dizzy on the 24th and 25th, especially when raising her head. Menses from the 22d to 25th, inclusive.

Urine examination (Detroit Clinical Laboratory, November 8th).—General appearance, cloudy. Specific gravity, 1.025. Albumin, none. Bile, none. Sugar, none. Indican, slight reaction. Diazo reaction. Iodine reaction present. Microscopical examination: An occasional leucocyte, few squamous epithelia, numerous yeasts, moulds, and bacteria.

Patient appears to be perfectly well in other respects. Syphilis and malaria are denied and do not appear to be present in our patient. The blood examination December 15, '05, shows: Hæmoglobin about 95 per cent.; red blood corpuscles a little less than four millions; leucocytes, 6800—indicating a slight anæmia.

The examination with the galvanic current gives the following results: (Dec. 6, '05, Drs. H. H. Cook and E. Amberg: one

electrode on the tragus, the other in the palm of the opposite hand.)

I.—1½ MILLIAMPERES.

		Right Ear	Left Ear
1	Kathode on tragus, current sliding in.....	No effect	No effect
2	Kathode opening.....	No effect	No effect
3	" closing.....	A little dizzy	No effect
4	Anode on tragus, current sliding in.....	No effect	No effect
5	Anode opening.....	No effect	No effect
6	" closing.....	No effect	No effect

II.—3 MILLIAMPERES.

1	Kathode on tragus, current sliding in.....	A little dizzy at first	Dizzy
2	Kathode opening.....	No effect	Dizzy
3	" closing.....	No effect	Dizzy
4	Anode on tragus, current sliding in.....	Dizzy	Dizzy
5	Anode opening.....	No effect	No effect
6	" closing.....	No effect	No effect

III.—5 MILLIAMPERES.

1	Kathode on tragus, current sliding in.....	Dizzy	Dizzy
2	Kathode opening.....	No effect	No effect
3	" closing.....	Dizzy	Noise more strongly like escaping steam, hissing
4	Anode on tragus, current sliding in.....	Dizzy	Dizzy
5	Anode opening.....	Dizzy	Dizzy
6	" closing.....	Dizzy	Dizzy

Scheppegrell (text-book, *Electricity in Diagnosis and Treatment of Diseases of the Nose, Throat, and Ear*, 1898, p. 324) says: "The easy reaction of the acoustic nerve with currents of one to three milliamperes is therefore indicative of an irritable condition of the internal ear or the acoustic nerve, when the objective examination enables us to exclude inflammatory affections of the middle ear."

Althaus (London, England), in an article ("Beitraege zur Pathologie und Therapie des Tinnitus Aurium"), mentions a patient, thirty-five years old, in whom he examined the ear reaction of

the acoustic nerve. Patient suffered, on account of business excitement, from nervous exhaustion, with dyspepsia, constipation, and melancholia. (I should like to call attention to the fact that we should consider a mental condition which is a distinct clinical entity only then as such when the picture is complete and when the clinical course is characteristic. We should avoid calling a condition melancholia if only a few or temporary symptoms are present which may be found present in melancholia.—E. A.) The patient of Althaus awoke one morning with tinnitus and suffered from vertigo when he moved his head. In a few days the hearing decreased. Strychnia, iodide and bromide of potassium, and a rest were temporarily beneficial. The electric examination showed a hyperæsthesia of the left acoustic nerve. Patient was cured by electric treatments.

Frankl-Hochwart (*Der Ménière'sche' Symptomen-Complex. Die Erkrankungen des inneren Ohres*, Wien, 1895) says: "My own numerous investigations have led me to results which come very near to those of Gradenigo. On the normal human being I have never been able to establish a reaction of the acoustic nerve, just as Pollak and Gaertner have not been able to do. According to Gradenigo, the irritation of the acoustic nerve can exceptionally be demonstrated in single individuals with external application of strong currents (6 milliampères). On the other hand, I have not infrequently found a response from the acoustic nerve in people in whom the hearing organ was affected first for kathode closing (1-2 milliampères); furthermore, with stronger currents for anode opening and anode closing we find this reaction very frequently in middle-ear affections of any kind. I have, however, in diseases of the inner ear, noticed that hearing sensation occurred when the current was applied in cases in which the middle ear was entirely well. Besides, in patients suffering from tetany the acoustic nerve is frequently very easily excited, even if they have a perfectly normal hearing apparatus (Chovstek, jun., and myself). This short review shows how little practical results we can expect from this method of examination, however interesting it may be from a theoretical point of view."

In deciding what has caused the affection in our case, we must consider that we have before us a patient who suffered, previous to the attack, from some hardness of hearing.

This degree of deafness was, however, by far not so pronounced as after the attack spoken of. Low forks are heard in both ears. The negative Gellé in the left ear may speak for a stapes ankylosis, which may have existed before, but the hearing of the low forks and the rather diminished bone-conduction for the Blake fork do not favor this diagnosis. The most prominent points which aid in a diagnosis are :

1. The good general condition.
2. The just ended menstruation and the intimation of a new attack on November 24th and 25th during the latter period of menstruation.
3. The effect of the hot bath on a summer day.
4. The mechanical unfavorable position of the head.
5. The suddenness of the attack characterized by the appearance of (*a*) vertigo and nausea, (*b*) tinnitus, (*c*) diminished hearing.

All this would point to apoplectiform disturbance in the organ of hearing and in a portion of the complex organ of equilibration. The absence of all other symptoms would speak for a localization in the inner ear, and the rapidity of the attack would indicate a hemorrhage into the left inner ear. The patient says that she was just over the menses on that day, but that she took a hot bath and that she placed her head in a position very much favoring a disturbance of the blood circulation in the head. I am very much inclined to think that the menstruation stands in some relation to the attack. The appearance of vicarious menstruation would speak for a change in the vessels during the time of menstruation. For some reason or other, this probable cause, in connection with the mechanical external cause (hot bath, bending of head), very possibly led to a hemorrhage into the labyrinth.

Moos says in Schwartz's text-book, vol., i., p. 540 : " Hemorrhages from the ear with the character of vicarious menstruation occur whether the drum membrane is perforated or not. If it is not perforated, the hemorrhage emanates from the outer ear canal, perhaps also from the surface of the drum membrane (case of Eitelberg), or it occurs in the middle ear and becomes the cause of

a subsequent suppurative otitis media, as happened in four cases of Benni, or it occurs in the labyrinth and creates bilateral total deafness with or without vertigo (Jacobson, Koll)."

It may surprise us that a probable hemorrhage into the labyrinth does not cause permanent, violent disturbances. We might expect the nausea and vertigo, *e. g.*, to continue indefinitely. We must remember, however, that the inner ear is only a part of the complex organism of equilibration. Experiments on animals show that we must accuse more the reflex irritation from the inner ear for causing the symptoms than the destruction of it.

Panse, speaking of experiments on animals (*Zur vergleichenden Anatomie und Physiologie des Gleichgewichts und Gehörsorgans*, Jena, 1899, p. 195), says: "When the various canals were cut there was a complex disturbance of motion. If all those canals on one side were cut, or if the whole labyrinth (Ewald) was removed, the symptoms showed sometimes only for a short time."

Page 204: "The partial redress of symptoms in operated animals which were so violent in the beginning, and especially also the observations on human beings in whom the cochlea was expelled on both sides, which is scarcely conceivable without affection of the semicircular canals, and who did not show any vertigo, proves:

"First, that the semicircular canals are not a centre organ for the sensation of equilibrium.

"Second, that besides those, also other parts of the body inform us of our relation to space. These other organs are the eyes and the organs of touch, which can be excited by reflex from one organ of sense, namely, by the labyrinth. Under ordinary conditions both are only rarely excluded in human beings, yet Breuer mentions the strange sensations, which are described by deaf-mutes when they swim under the surface of the water. They are attacked by a terrific fear, and even in water only a few feet deep they swim directly under the surface without being able to appear above the surface by a simple motion of the head.

"As in about one-third of the deaf-mutes the labyrinth is missing, but as the central organ seems to be healthy, because it acts upon other irritations, we must consider the symptoms mentioned above as a defect of the organ of equilibrium in the inner ear."

Also the clinical observation in human beings corroborates this finding.

Panse (*loc. cit.*, pp. 197 and 198) says: "A valuable supplement of the experiment on the animal are therefore cases in which carious defects were found in the horizontal semicircular canal when the middle-ear cavities were opened. When the wound was packed, or if pressure was exercised with the probe on these parts, there appeared nystagmus-like motions of the eye and vertigo in such manner that the field of vision seems to move in a horizontal plane. These observations, which are made by many surgical otologists, or which can be made occasionally, prove, more clearly than any experiment on the animal, that we cannot speak of the irritation of the small brain.

"Jansen publishes from the Ear Clinic in Berlin a veritably confusing array of the most manifold cases of labyrinthine coaffection in middle-ear suppuration. The physiologically most important observations are those of thirteen surgical lesions of the semicircular canals, three times of the lower one. Even before the operation there were dizziness, nausea, and feeling of vomiting. In two cases there was, after the operation, violent nystagmus when the patient looked toward the healthy side. In nine injuries of the horizontal semicircular canal there was nearly always nystagmus. Since Jansen looked for it he has never missed it in injuries of the labyrinth except in one case in which only the bony canal splintered off, in which the membranous canal in all probability was not injured. In several patients with previous injuries the nystagmus could not be shown any more. The twitching seemed, as a rule, to be directed toward the healthy ear, and increased when the patient looked toward the same.

"These disturbances gradually disappear in the course of two to four weeks. As a rule, the vomiting ceases after four or five days; after eight days the patient is able to leave the bed without, however, being entirely free from dizziness. If the patient turns quickly, especially around the injured side, if he looks up, if he goes up or down stairs, the dizziness shows itself, still after a long period, sometimes lasting several minutes. Meanwhile the nystagmus decreases and disappears, as a rule, entirely after two weeks until, at the latest, after four or five weeks, whereas the disturbance of the equilibrium can be shown sometimes even

after years. In children symptoms seem to appear much less. Where the disturbances of the equilibrium are of a long duration, or where there is considerable decrease in hearing, the conclusion is justified that an infection of the vestibulum has resulted. Jansen mentions further: 'I have never seen in cerebral complications such grave forms of disturbances of the equilibrium as I have seen in these true rare cases of labyrinthian suppuration.'"

It would seem that the case described in this paper may be of interest for the reason that vicarious menstruation may possibly play an important part in the causation of the affection.

WHAT CASES OF CHRONIC PURULENT OTITIS REQUIRE THE RADICAL OPERATION?¹

By ARNOLD KNAPP, M.D., NEW YORK.

THE radical operation for the cure of chronic purulent otitis has now been practised for about seventeen years. It may be assumed that a possible exaggeration of this operation's true worth, due to the enthusiasm with which every apparently meritorious procedure is received during the first years, has now been corrected, and that a sober judgment of the value of the operation can be rendered and its indications defined.

As far as I can judge, the views of this operation are tending to greater conservatism. Ballance² is the only one who states that he has no longer any doubt that all cases of chronic purulent discharge from the ear should be treated by the complete operation. Koerner³ says in his book that the radical operation is indicated as soon as the diagnosis of chronic osseous disease is confirmed; from a personal communication, however, while visiting his clinic two years ago, I found that he had returned with favor to ossiculectomy and subsequent treatment with the tympanic canula. Grunert⁴ states that the greater half of the cases where

¹ Read at annual meeting, Am. Laryng., Rhino., and Otol. Soc., Eastern Section, Syracuse, N. Y., February 10, 1906.

² BALLANCE: "The Difficulties and Dangers of the Mastoid Operation," etc. *The Lancet*, Sept. 30, 1905, p. 952.

³ KOERNER: *Die Eitrigen Erkrankungen des Schäfenbeins*. Wiesbaden, 1899.

⁴ GRUNERT and SCHWARTZE: *Grundriss d. Otologie*. Leipzig, 1905.

the excision of the ossicles was indicated were healed by this operation. Scheibe in Bezold's clinic no longer insists on a radical in every case of cholesteatoma, but treats his cases with the tympanic canula, and only operates if the fœtor does not disappear in three weeks. Jansen¹ is inclined to think that in these apparent cures the bone disease simply becomes latent for a time. To return to the subject of this paper:

I shall leave out of consideration cases of chronic purulent otitis where intracranial complications, stenosis of the canal, and acute mastoiditis are present, as the wisdom of operating under these conditions must be self-evident.

We have remaining a series of cases which are not of the same importance. Some of these are more apt to be followed by dangerous cerebral symptoms and should be operated upon under certain qualifying conditions. We shall first of all endeavor to trace the characteristics of these cases. An excellent and practical classification has been adopted by the Berlin Ear Clinic, as described by Heine,² where the cases are divided into two groups: dangerous and non-dangerous. In the former the bone is affected, especially in the attic and antrum. In the latter, the inflammation is more localized to the mucous membrane of the tympanum, a region from which intracranial complications rarely ensue.

In what way can we tell that the bone is involved? First, by the characteristics of the discharge and its fœtor. Second, by the otoscope picture. There is a total defect of the drum, or the perforation is marginal, the adjoining portion of the annulus eroded, the perforation being situated next to the superior or posterior wall—in other words, contiguous to the attic and antrum. The use of the probe, in my opinion, is of but little advantage.

It is important to determine the presence of cholesteatoma. This is sometimes difficult. In cholesteatoma the typical pearl-like epithelial scales are present in the canal, or can be

¹ JANSEN: *Die deutsche Klinik*, 1905, vol. viii., p. 245.

² HEINE: *Operationen am Ohr*. Berlin, 1904.

fished out with the hooked probe, or by the use of the tympanic canula, and have a characteristic odor. The presence of cholesteatoma is an urgent indication for operation unless the opening of the accessory cavities into the middle ear is large, and there apparently is no tendency to retention. I remember recently seeing a patient, with the history of an old otorrhœa, who was suffering intensely. Examination revealed an inflamed canal, a very tender mastoid, and the depth of the ear-canal filled with cholesteatoma. He was sent to the hospital for operation. Before operating I attempted to clean out his ear through the meatus, and removed enormous quantities of cholesteatoma from the mastoid process. This was facilitated by a large defect in the posterior wall. After it was all removed we had a large, clean cavity before us, like after a successful radical; the patient's symptoms were relieved, and an operation was not performed as it was no longer necessary.

In cases of simply chronic osseous involvement, the "caries and necrosis" of the authors, much can be obtained by conservative treatment. If under these conditions the discharge does not cease or lose its odor, the question of operation should be considered.

In addition to these local conditions, we have three general symptoms often present whose proper interpretation requires considerable experience. These are headache, nausea, and vertigo. The nausea is the least characteristic and usually associated with one or both of the others. The presence or aggravation of these symptoms, with a cessation of the discharge, points to the retention in the accessory cavities and usually necessitates operation.

Headache, of course, varies with the sensitiveness of the patient. The misleading symptoms of hysterical women have led to needless operations. The headache may be localized to the ear, or to that half of the head; it may be supra-orbital or occipital in location. We must try to bring this symptom in relation to the ear disease. It has seemed to me that pain over the eye on the same side as the ear affection is often connected with a process in the attic, while dis-

ease farther back in the antrum, especially in its posterior wall, causes more frequently occipital symptoms.

Vertigo is another symptom which must be gone into thoroughly. The ideas of the laity on what constitutes dizziness are very vague, yet if it be present in a typical manner, it is of greatest importance, indicative of labyrinth disturbance, and a very important operative indication. In one of my patients it was the only general symptom; at operation granulations were found extending through the oval window, which were successfully removed, and the symptom permanently relieved. In many cases vertigo means a lesion of the external semicircular canal, and with it there is always nystagmus, which can often only be elicited by directly examining for it. It must not be forgotten that in disease of the semicircular canal the hearing need not be lost.

This completes the "dangerous" group; the other cases, where there is but little likelihood of intracranial extension, are those in which the mucous inflammation in the tympanum predominates. These are the cases with anterior or central perforation and where the Eustachian tube is usually involved. I have been observing for years a young patient of this kind where the disease seems to be entirely in the anterior and tubal part of the tympanum. There are no symptoms beyond the discharge, which is muco-purulent, and without odor. The patient has been perfectly willing to undergo any operation, but we would accomplish absolutely nothing by converting the attic and antrum into an open cavity. It must be confessed that we are powerless in accomplishing much by operating for disease of the tympanic walls proper. Necrosis of the promontory wall had better be left alone. Curettage about the mouth of the Eustachian tube is often spoken of, but should be performed with great caution. The recesses in the tympanum are so hidden and surrounded by vital parts, not only for the patient, but for the operating surgeon (I refer to the facial nerve), that we frequently cannot remove all disease. I have a case in mind of a boy on whom I performed the radical operation three or four years ago, who, in addition to disease in the

upper cavities, presented considerable caries in the posterior segment of the tympanum. Every attempt to curette this region caused a facial convulsion, and the operation could not be completed. This same area is still unhealed. I do not think it can be too firmly emphasized that lesions in the tympanum without changes pointing to affections of the adjoining cavities do not call for the radical operation. The method cannot be radical in the true sense of the word, the patient is not relieved of the main symptom (the discharge), and the surgeon is discredited.

In the former or so-called "dangerous" group, there are many cases where minor operations suffice to bring about good drainage and to prevent retention and its dangers, but where there still remain indications of bone disease. The patients are safe when under occasional or constant observation. In these we must be led by the patient's wish. The operation is not urgent, but justifiable. We cannot blame a young girl for wishing to be relieved of a running ear. Other patients may wish to be released of the surgeon's apron-strings, and to regain their aural liberty. One point which is of the greatest importance is the state of the hearing in the other ear. If the other ear is poor we should do everything to avoid a radical in the affected ear, as we cannot guarantee, however careful we may be, but that the hearing will be diminished after the operation.

In conclusion allow me to express my views on the indications for the radical operation as follows:

The operation is not indicated when the tympanum and especially its mucous lining are involved, because intracranial complications are not likely to ensue and the operation usually accomplishes nothing.

The operation is urgent when the symptoms of headache, nausea, and vertigo are associated with, and in relation to, chronic purulent otitis; where the bone is found affected, or cholesteatoma is present, and these symptoms are not promptly relieved by a minor operation.

The operation is indicated when the signs of bone involvement continue after conservative treatment has been followed

for a certain length of time and the odor in the discharge persists. The operation is not necessarily urgent in these cases, as good drainage is present. The question of operation then depends on the patient's wishes and the condition of the hearing in the other ear.

THE LEUCOCYTE COUNT IN INFLAMMATORY DISEASES OF THE EAR AND OF THE TEMPORAL BONE AND IN OTITIC INTRACRANIAL COMPLICATIONS.

BY DR. SUCKSTORFF, HANOVER, GERMANY.

FORMERLY FIRST ASSISTANT IN THE EAR CLINIC IN ROSTOCK.

Abridged Translation from the *Zeitschr. f. Ohrenheilk.*, Vol. XLV., 1903,
German Edition of these ARCHIVES.

SINCE Curschmann in 1901 again drew attention to the importance of the leucocyte count in a diagnostic sense in suppurations, many papers have appeared which have more or less confirmed Curschmann's results. It seemed worth while to examine the number of leucocytes in the aural suppurations and to determine, if possible, whether the leucocyte count had increased when the purulent process had invaded the bone, or when a severe complication like meningitis, sinus thrombosis, or a brain abscess was present.

Head (*Pediatrics*, Feb., 1900) has counted the number of leucocytes in aural suppurations and states that in the so-called catarrhal otitis media there is rarely a leucocytosis, while in the purulent otitis media the leucocyte count is between 20,000 and 30,000 in a *ccm.* Fifteen case-histories of children are briefly reported, who suffered from various diseases, principally from appendicitis, with only one case of purulent otitis media. The leucocyte count in these cases gave 25,000.

My results are as follows:

I have examined seventeen cases of serous otitis media. I have included in this number the cases in which the paracentesis did not evacuate a distinct exudate and where principally

there was a decided flattening of the drum by hyperæmic swelling of the mucous membrane and a serous imbibition of the entire membrane. I also included in these cases cases where one was in doubt whether the evacuated exudate was serous or slightly clouded.

As Schwinge has shown, the number of leucocytes in children up to ten years of age is higher than in older children and in adults; my seventeen cases can be divided into two groups: those in patients under ten and those in patients over ten years old. In the first category there were six, in the latter eleven. The blood to be examined was obtained immediately before or after the paracentesis of the drum membrane. The leucocyte counts in children under ten years showed an average of 13,300. This, if we take 12,900 as the normal, shows that there is no increase in leucocytes in serous otitis media in children. The same relations were found in the serous otitis of adults. Repeated examinations after the aural inflammation had run its course showed that the leucocytes frequently diminished, though this diminution was always very slight.

Eight cases of acute purulent otitis were examined, four in patients under ten and four in patients over ten years of age.

The average in the former group was 20,150; in the second group, 12,900. There is, therefore, in acute purulent otitis a slight increase of leucocytes, which is, however, very slight, and does not possess practical importance. Head's figures are unquestionably too high. That the number of leucocytes in children under ten should be so large is not astonishing if we remember that children react with an increased number of leucocytes to suppurations and other diseases. After the otitis had run its course a decrease in the number of leucocytes took place, though this decrease occurred slowly. Fever, as has been shown by others, has apparently an influence on the number of leucocytes.

Six adult cases of chronic purulent otitis were examined. The average number was 10,700. Therefore we can see that there was no rise of leucocyte count in chronic otitis.

The cases of mastoiditis are of considerable interest for

us. These again must be divided into those with and those without intracranial complications. As a rule, the cases were principally those of acute mastoiditis; in a few, chronic mastoiditis with acute exacerbations. The mastoiditis without intracranial complications in children was present in four cases. The average number was 16,400. The mastoiditis in adults without intracranial complications showed an average number of 12,740.

We see that the count in mastoiditis without intracranial complications shows a slight increase in the leucocytes, more marked in children than in adults. The average number in adults in acute mastoiditis and acute otitis are exactly alike, while in children, if anything, the number of leucocytes in mastoiditis is less than in the uncomplicated acute otitis.

Two cases of meningitis were of considerable interest. Rieder believes that the absence of leucocytosis confirms the diagnosis of tuberculous disease of the meninges. A marked leucocytosis is more apt to speak for idiopathic disease of the meninges. He says that for the development of a leucocytosis in non-tuberculous diseases of the serous membranes the nature of the exudate (whether serous or purulent) is of less importance than the question whether the inflammatory process is about to develop or has become stationary. Turk found that in purulent cerebro-spinal meningitis and in secondary purulent meningitis leucocytosis was present. It would seem from these two authors that the leucocyte count might aid us in making the diagnosis of meningitis. Unfortunately these two cases of ours show that the leucocyte count does not give us a certain aid in the diagnosis of meningitis by an increased leucocyte count.

In conclusion it may be said that the leucocyte count does not aid us in determining upon a surgical intervention in the above-mentioned diseases. The reason why the leucocyte count is not increased in mastoiditis is possibly because the abscess in the mastoid process is surrounded on all sides by bone. The pus can therefore not act chemotactically as in the soft parts. The increase of leucocytes in the case of brain abscesses can thus be explained. Before the operation

the abscess was surrounded by a thick so-called abscess membrane from the surrounding tissues, and thus the body at large was protected from the action of the pus. If the membrane was then destroyed at operation the body reacted by an increase of leucocytes.

I am well aware that this material is insufficient to furnish definite data. It is published with the hope of inciting others with more suited material at their disposal to undertake further investigations, that we may thoroughly solve this interesting question.

ON POST-OPERATIVE PYOCYANEUS PERICHONDRI- DRITIS OF THE AURICLE.

BY DR. TATSUSABURO SARAI, JAPAN.

(FROM THE UNIVERSITY EAR CLINIC, ROSTOCK.)

Translated from *Zeitschr. f. Ohrenhkl.*, German Edition of these ARCHIVES,
Vol. XLV., 1903.

ONE of the most unpleasant complications in the after-treatment of ears which have been operated upon for chronic suppurations of the middle ear or the temporal bone after the Zaufal or the Stacke operation is the appearance of purulent perichondritis of the auricle. This obstinate, painful complication, which frequently leads to ugly thickening or deformity of the auricle, is the result of an infection of the cartilage with the bacillus pyocyaneus.

Pes and Gradenigo were the first authors to find the bacillus pyocyaneus in pus from perichondritis. Leutert found the pyocyaneus in pure culture in four cases of post-operative perichondritis.

It is of interest to see whether every post-operative perichondritis is caused by this bacillus.

Professor Körner has observed this complication five times in fifteen years. In all of these five cases the pyocyaneus had discolored the discharge from the wound green before the onset of perichondritis. This constant association of green pus with perichondritis suggested that the latter was caused by the bacillus pyocyaneus, and in the last case to be observed this etiological connection was confirmed.

It was the case of an anæmic girl of seventeen years of age who had been operated upon according to Zaufal, with Kör-

ner's meatoplasty. Three weeks after operation the presence of the bacillus pyocyaneus was suspected from the color and the odor of the pus. The wound cavity was no longer dressed with moist (2% carbolic acid) gauze, but a dry dressing was applied every third day. Before introducing the dry packing, a pledget of gauze saturated in 2% silver-nitrate solution was introduced into the ear for 10 minutes. This is a procedure which has been extremely serviceable in the Rostock Ear Clinic against the pyocyaneus in furuncles of the canal. A few days after the pyocyaneus had been observed, the auricle began to swell, with darting pains and slight rise of temperature. The auricle and the canal became red and tender. In a few days more the cavity and cyma conchæ were obliterated by the swelling, and the inflammation extended to the anterior part of the helix. As long as no fluctuation was present, the inflammation was treated with local dressings. After the wound cavity had been treated as has just been described, the auricle was carefully covered with gauze soaked in alcohol, and a piece of oiled silk and a bandage then applied. Under this dressing the pain disappeared and the inflammation did not extend.

After two weeks, fluctuation was found in the cavity of the concha. On pressure in the fluctuating area no pus escaped into the wound cavity. After packing the wound cavity the swollen area was disinfected and incised. The pus which escaped was thin, with flocculi, not green, and was received in two sterile tubes. The granulations were scraped and the cavity packed with gauze. The cartilage apparently was not necrotic and was left alone. The abscess cavity healed kindly, and instead of the gauze a drainage tube was inserted. Three weeks later some more granulations had to be removed. No cartilage was given off, and fourteen days later the incision had closed. A decided thickening of the cavity and cyma conchæ remained, which, however, diminished by the continuation of the local treatment.

The pus contained in the abscess was examined in the Pathologic Institute and the bacillus pyocyaneus was found present in pure culture.

A CONGENITAL FIBROLIPOMA OF THE PAL- ATAL TONSIL.

BY DR. ZOLKI IN STRASSBURG.

(Translated from, and with one illustration on Plate VII., *Zeitschr. f. Ohrenhkl.*, XLIV., German edition of these ARCHIVES.)

BENIGN tumors of the tonsils have rarely been observed. This is shown by the fact that Ardenne, in the year 1896, while writing his dissertation, inquired of the most prominent authorities in this branch in Europe and formally received the answer that this condition has never, or very rarely, been observed. I have consulted the literature on this subject in my dissertation on the *Benign Tumors of the Tonsil*, Leipzig, 1901.

The authors have apparently not considered this question of sufficient importance, whether the tonsil tumor was acquired or congenital, a very important point to my mind. On looking through the literature I find the following statements:

In demonstrating a fibroma of the tonsil before the New York Pathological Society, Delevan reported on a case of congenital fibroma of the tonsil which Wagner had observed. It was stated that the tumor, though of quite a respectable size, had not annoyed the patient until two weeks before the operation.

A similar case of congenital tumor with a tonsillar polyp was observed by Birkitt and Adami in a child four months of age.

We are fortunate in being able to add another case which was observed in the Strassburg University Ear Clinic.

M. S., seven years of age, has suffered for the last four years from a disturbance in swallowing. The mother states that shortly after the birth of the child she observed a tumor in the child's throat. On examination, a large pale-red tumor with a smooth surface is seen to be situated on the left tonsil, with a free end projecting into the buccal cavity.

The tumor is removed on the same day with Mathieu's tonsillo-tome. Fourteen days later the patient was healed. An inquiry made of the parents of the child four years later elicited the statement that no relapse had been observed.

The tumor is of an elongated club shape, attached with a narrow pedicle to the tonsil and sways freely in the mouth. At its broader extremity there is a small appendix. The smooth surface shows few indentations. The greatest length is 30mm, breadth 11mm, thickness about the same.

Microscopically, the covering of the tumor consists of several layers of pavement epithelium, which become horny in the superficial layers. The entire tumor consists of connective tissue traversed by numerous blood-vessels. The connective tissue is in general poor in nuclei. The few cells are usually fusiform in shape, frequently round and egg-shaped, with hematoxylin stain presenting distinct granulations which resemble mast-cells.

The fibrous tissue shows several areas of fatty and of lymphatic tissue. These are especially marked when the tumor is attached to the tonsil. This is, however, explained because a part of the tonsil was removed with the tumor. A number of lymph cells are also found in the fibrous tissue collected in groups of irregular shape resembling follicles.

The most unusual feature is an area of lymphatic tissue 5mm in diameter in the most external peripheric part, viz., the part farthest away from the tonsil. This part also contains follicles—in fact looks like a piece of tonsil.

In other words, this is a congenital tumor of the left tonsil in a child seven years of age. Macroscopically it presents the features of a benign tumor, which was confirmed by the microscopic examination and the subsequent clinical course. This showed that a tumor covered with pavement epithelium

consisted principally of fibrous tissue with islets of fatty tissue. As there were no collections of cells suggestive of sarcoma, and as the connective tissue predominated over the fatty tissue, the tumor must be regarded as a benign connective-tissue growth belonging to the group fibrolipoma.

Extremely interesting were the small areas of adenoid tissue. Their appearance can be explained by the theory that the fibrous parts in their growth had taken a small part of the tonsillar tissue with them, and the latter then developed into the lymphatic collections described.

ON THE COURSE OF THE SIGMOID SINUS IN THE CHILD'S SKULL.

BY DR. P. RUDLOFF, WIESBADEN.

Abridged Translation from *Zeitsch. f. Ohrenhkl.*, Vol. XLV., 1903, German
Edition of these ARCHIVES.

MACEWEN describes, in his well-known book on *Pyogenic Diseases of the Brain and Meninges*, peculiarities in the external surface of the skull which aid us in determining the course of the transverse sinus. As regards the course of the sigmoid sinus, he states that if we connect the deepest part of the parietal incisure of the temporal bone with the mastoid process, this line in the adult describes the middle part of the venous sinus, sometimes its posterior part on the left side, frequently its anterior margin. On examining a number of skulls, I have been able to confirm this statement for adults, but the conditions in the child are quite different. Macewen also states that in the new-born the sigmoid fossa is a very shallow groove, so that the sinus is very much more superficial than in the adult, but I have found that this does not sufficiently elucidate the conditions present in the child. Moreover, as this question has a particular value and, for the practising physician, it is frequently difficult to obtain material for these studies, I have examined a large number of specimens from the Anatomical Department in Marburg, and have come to the following conclusions.

I should like to preface this by a brief report of an unsuc-

cessful operation, which led me at the time to study more exactly these anatomic relations.

A child two years of age suffered from measles and from broncho-pneumonia and a left-sided purulent otitis. It is difficult to determine whether the high temperatures were the result of the middle-ear suppuration or not. Anybody who has met with this question knows that only a careful observation will give the correct solution. An observation lasting over five days showed that the symptoms on the part of the diseased lobe of the lung diminished, while the discharge from the ear remained the same and the temperature, which at first fell, then rose. The radical operation was therefore performed, and the bone, which borders on the middle and posterior cranial fossa, was carefully examined. There were no macroscopic lesions and no fistulae. The temperature continued, and we had to think of a possible intracranial complication, in addition to the broncho-pneumonia, which still remained present. As there were no other symptoms characteristic of an intracranial complication (vomiting, somnolence, rigidity of the neck, retardation of the pulse), it did not seem advisable to operate further until, on the seventh day after the first operation, a metastasis occurred in the right shoulder-joint, by which the diagnosis of sinus thrombosis was made. The diseased joint was exposed, and at the same sitting the posterior cranial fossa was laid bare. An extradural abscess was evacuated. The pus focus had separated the dura from the bony surface to some extent, and a round opening with a diameter of almost 2cm resulted from the operation. The dura was grayish white. The discolored exposed dura did not permit us to determine the localization of the sinus. I neglected to expose more of the dura, thinking that the course of the sinus could be found from Macewen's line, forgetting that Macewen's statements do not apply to the juvenile skull, but to the skull of an adult. Thinking that the sigmoid sinus in a child had probably not advanced so far into the mastoid as in an adult, I made an incision on the lateral side of Macewen's line. I did not encounter a thrombus, nor

even fluid blood, but evacuated a few drops of serous fluid, which unquestionably came from the subdural space. The dressings were saturated for the next few days with cerebrospinal fluid and the child died two days later. The autopsy revealed that I had incised the subdural space at the inner side of the sigmoid sinus. The autopsy, moreover, showed that the incision of the dura was not the cause of meningitis, that this was a thrombus in the horizontal part of the transverse sinus extending into the superior petrosal sinus, and that, in addition to the metastasis in the shoulder joint, there were many metastases in the surrounding muscles of the chest, and that the head of the humerus, as well as the fifth and sixth ribs, were separated at the osseo-cartilaginous junction. Both lungs showed bronchopneumonia foci.

The anatomic conditions of the sigmoid sinus in the child are as follows:

In the child the anterior margin of the sigmoid sinus is situated at a varying distance posterior to Macewen's line:

I. At the level of the root of the zygomatic process the distance is:

1. In the new-born..... 6mm
2. In a child one year of age 6 "
3. In a child between two and three... 10 "
4. In a child six years of age..... 3 "
5. In a child between nine and ten... 7 "

II. At the level of the parieto-mastoidal suture the distance is still greater:

1. In the new-born..... 7mm
2. In a child one year of age..... 10 "
3. In a child between two and three... 17 "
4. In a child of six..... 6 "
5. In a child between nine and ten.... 16 "

The distance is greater the broader the mastoid process. In the new-born, the groove in the temporal bone over the sigmoid sinus is so shallow as to be hardly recognizable. It grows, however, in the course of years, and in the seventh

year it resembles a half cylindric groove, while the mastoid process, in its further development, extends somewhat backward. As the groove becomes deeper the sinus travels forward, so that its anterior margin in the course of years gradually approaches and passes beyond Macewen's line. These results were obtained from fourteen skulls. They show variations, but never the conditions which Macewen has described for adults.

My short paper should therefore serve to supplement Macewen's statements, and it is of great practical importance for the operator to know that the sigmoid sinus in the child is to be found in a different place from that of the adult.

REPORT OF THE TRANSACTIONS OF THE NEW YORK OTOLOGICAL SOCIETY.

By THOMAS J. HARRIS, M.D., SECRETARY.

MEETING OF JANUARY 23, 1906, DR. J. E. SHEPPARD, VICE-PRESIDENT, IN THE CHAIR.

Dr. ALDERTON presented a case for **diagnosis**.

Boy, aged eleven. Was first seen by him last spring. There was present, in addition to atrophic rhinitis and possible involvement of the right antrum, œdema of the uvula. This seemed to be due to the presence of a bristle in the supra-tonsillar fossa, which had evidently been there for some time. The bristle was removed, but the œdema continued. Later a portion of the uvula was removed and submitted for microscopic examination. The pathologist reported that it had many of the appearances of an endothelioma. There was some suggestion in the family history of syphilis, and iodide of potash was administered without effect. Later the case was seen, in consultation, by Dr. Berens, and upon his advice the iodide was increased to large doses and inunctions of mercury added, equally without benefit. Gradually the lips began to swell, and the condition of the patient has been growing worse. At the present time the uvula and epiglottis are enormously swollen and œdematous. The vocal cords cannot be seen. The soft palate is brawny and firm, and shows a peculiarly white color.

Discussion: Dr. HARRIS suggested the possibility of iodine poisoning, and referred to a case that he had recently seen with a similar appearance, where the iodides were supposed to have caused the condition.

Dr. QUINLAN agreed with Dr. Harris as to the possibility of iodism. He had seen such results in the larynx following the use of large doses of iodides. In his judgment children bore the drug poorly.

Dr. COWEN suggested the possibility of elephantiasis.

Dr. Bryant presented a case of **mastoiditis**, duration six weeks, with a history of recurrent middle-ear suppuration, in a boy seventeen years old; temperature 100.4° . An extensive section of the membrane was made. The mastoid process and cells were removed, and the posterior wall of the osseous auditory canal was taken down up to the annulus.

The superior wall of the meatus was removed, opening the epytympanic space, but leaving the attachment of the membrane and ossicles intact. The posterior and middle roots of the zygoma were removed. The dura mater was laid bare over the knee of the sinus and the tegmen tympani. The smear from the mastoid pus showed mixed infection. The wound was closed without packing.

First day, temperature normal. Second day, packing taken from the canal. Third day, patient up, no discharge from the ear. Nearly all the post-aural wound healed by first intention. Fifth day, fundus of canal nearly dry. Eighth day, patient goes out. Tenth day, membrana tympani healed and closed, fundus of meatus dry, post-aural wound healed, except one point. Eleventh day, all the wound scabbed over and healed. Sixteenth day, watch heard thirteen inches. One hundred and thirty-fifth day after the operation, watch heard forty-six inches in the operated ear, fifty inches in the normal ear.

There has been no pain or discomfort of any kind in or about the ear since the operation. Meatus looks normal, the membrana tympani nearly so. The post-aural surface is smooth, with a linear cicatrix. The mastoid process has been renewed, and is nearly the counterpart of its fellow.

Dr. ALDERTON presented a case of **pedunculated exostosis** of the upper osseous canal wall at its outer margin, which was discovered during treatment for impacted cerumen. He referred also to the development under observation of a recent case of exostosis of inner tympanic wall six months after an ossiculectomy.

Discussion: Dr. QUINLAN referred to a family of three

brothers in all of whom exostoses had existed, sessile in character. The men followed the river as a means of occupation and were in the habit of diving frequently. The growths were easily shelled out by means of a hook, previous skin incision having been made.

Dr. MCKERNON reported a case of **brain abscess** accidentally discovered in the course of a mastoid operation. The patient, a boy, was brought into the hospital in a comatose condition with a swelling over the right mastoid process. Operation the day of admission. Pus was discovered in the mastoid cells. The inner table was removed and the sinus exposed, also a portion of the cerebellum. In the course of the curetting, the curette accidentally slipped and wounded the exposed dura in the posterior portion of the temporo-sphenoidal lobe, and at once a quantity of pus, approximating one ounce, was evacuated. The finger introduced showed a distinct lining membrane. The cranial wound was dressed in the way recommended by Macewen—plain sterile gauze, wrapped up and saturated with equal parts of boric acid and iodoform. Healing took place in three weeks. No brain hernia occurred. The dura was not congested.

Discussion: Dr. ALDERTON commented on the absence of discoloration of the dura. He had recently seen a case where brain abscess was suspected. The dura was exposed and found normal, as was the adjacent bone. No puncture was made. Temporary improvement took place, but there was a return of the symptoms and death ensued. The autopsy showed abscess of the brain.

Dr. KENEFICK said we must bear in mind that normal brain tissue as well as normal bone may exist between the brain abscess cavity and the external wound.

Dr. ADAMS said that he always made punctures in the brain where he suspected an abscess. He reported a case where he had punctured the brain with negative results. The patient died, and although no autopsy was performed, in his opinion an abscess had been present but was not discovered owing to insufficient puncturing.

Dr. HASKIN reported a case of **extensive mastoiditis** where at the time of the operation a fistula into the brain was discovered. No packing was put in. The patient recovered.

Dr. BRYANT reported a similar condition discovered in the course of a radical operation.

Dr. McKERNON thought that the absence of all changes in the dura in the case of suspected brain abscess would incline him to refrain from puncturing.

Dr. BRANDEGEE reported a case of **death from pulmonary thrombosis following operation for sinus thrombosis**. This occurred in a child three years old who was admitted to the hospital for suppurative otitis and mastoiditis. An extensive mastoid operation was performed; uneventful recovery; and the patient was discharged from the hospital. Several months later the child was brought back for a secondary mastoid operation. Operation was performed on January 11th. Necrosis at the roof of the antrum was discovered, and a fibrous mass over the sinus was seen and partially removed. The sinus looked healthy. Two days later the temperature rose to 102° , and the third day to 106° . Mental condition good. Operation. On opening the sinus no return flow was obtained from below. The curette was introduced and readily established a return of the blood. The child did well after the operation. Four days later he suddenly awoke with a cry of pain and symptoms of heart failure. The chest appeared to be full of râles. Death. Diagnosis: pulmonary thrombosis.

Discussion: Dr. ADAMS felt that it was a good plan to remove the jugular vein, even in case of a return flow of the blood. The walls of the vein are liable to be diseased.

Dr. McKERNON thought that in future we would be inclined to do primary ligation more frequently.

Dr. KENEFICK felt that with the data at hand we were not yet prepared to draw firm and fast conclusions in the matter. He referred to a case of Dr. McKernon's where he saw a clot removed with a curette from the region of the jugular bulb and recovery took place without ligation of the vein.

Dr. HARRIS referred to Koerner's statistics showing that the percentage of recovery was about the same in the case of ligation of the jugular vein before and after opening the sinus.

Dr. McKERNON thought that Dr. Brandegge's case and the one operated by him, referred to by Dr. Kenefick, were not alike—the one was an acute and the other a chronic case. It had been

abundantly shown that the return flow of the blood, often in a large degree, proceeded from the petrosal sinuses.

Dr. DUEL thought the important question to be decided was whether we should invariably open the vein in cases of suspected sinus disease. His experience with sinuses covered with granulations, but with no sweats or "sawing" temperature, led him to adopt the plan of thoroughly exposing the sinus and then awaiting developments. Often the patient recovered without further symptoms. If, however, the sinus undoubtedly contained a septic clot, he thought the vein should be ligated before attempting its removal.

Dr. ALDERTON could see no objection to such a ligation of the vein.

Dr. RAE thought that no hard and fast rule could be followed. In cases where sufficient time for observation has not been permitted, and where the appearance of the sinus seems to demand interference, he did not think that the vein should be ligated until the sinus had been opened and the thrombus demonstrated. The sinus having been opened, hemorrhage from the torcular end re-established, and there being no bleeding from the bulb, he thought that the vein should then be ligated, without any attempt being made to establish hemorrhage with the curette. He also thought that if the rule were blindly followed of first excising the jugular, sooner or later the operator would necessarily face the situation of having removed the vein when subsequent opening of the sinus failed to reveal the presence of a clot.

In reply to Dr. Duel, he did not think that the presence of granulation on the sinus wall constituted an indication for opening the sinus. Such a layer might well be protective in character, and such a sinus should only be opened when the well-known indications of general sepsis were present.

Dr. ADAMS often opened the sinus when covered with granulations and with symptoms of sepsis, without finding any clot. These cases had recovered.

Dr. HASKIN agreed with Dr. Duel in the advisability of refraining from opening all sinuses covered with granulations even attended with other symptoms. He referred to his operative experience of seven years where, in a large number of mastoid cases, he had not found it necessary to open the sinus, and had had no fatal results.

Dr. COWEN reported a **fatal case of brain abscess**. The patient, a man, had previously been in a general hospital for a number of months, complaining chiefly of headache. On account of his complaints and peculiarities he was regarded by the physicians and nurses as a malingerer and was discharged from the hospital. Later he came under Dr. Cowen's care, who treated him for two and a half months. Hypodermics of morphine always relieved the pain, as did hypodermics of water which were soon substituted. There was a slight purulent discharge from the ear—one or two drops in the course of twenty-four hours. No mastoid tenderness. The consulting neurologist diagnosed a brain abscess, but was unable to localize it. After much reluctance, Dr. Cowen decided to operate upon the mastoid, which he found in a sclerosed condition. He was unable to establish communication with the tympanic cavity. No attempt was made to open the brain. The headaches showed some improvement after the operation. A short time later the patient suddenly died. Autopsy showed an abscess on the under and inner side of the cerebellum. Death was supposed to be due to the involvement of the respiratory centres. Dr. Cowen commented on the difficulty of deciding in such cases when to operate. The responsibility rests not with the neurologist but with the surgeon, and in his judgment the position of the abscess made him feel that it was fortunate he had not operated. There were no localizing symptoms whatever, and no temperature. Indeed he was not fully decided that the infection proceeded from the middle-ear.

Dr. BRYANT reported two cases of flat **exostoses** near the membrana where the canal was nearly closed. In reply to a question from Dr. Hepburn he said that there was a history of gout as well as syphilis.

Dr. HASKIN reported a case of **radical operation** where in the course of the operation the curette wounded the facial nerve, and it was found that the entire bony covering of the facial canal was lacking. It was possible to introduce the curette underneath the nerve. Considerable facial paralysis followed the operation, but a week later this had decidedly improved.

Dr. ALDERTON reported a similar case of exposure of the nerve where a paralysis had already existed for five weeks. This cleared up after the operation.

Dr. ADAMS reported a case of **obscure diagnosis with symptoms of sepsis** which was seen by him after having been under the care of Dr. Peabody for some time, who was unable to discover any organic disease. The ear showed evidences of some former disease. There was pain over the jugular and double choked disk. Operation on the mastoid was recommended. Very profuse bleeding followed the usual incision, as well as the opening of the bone. This was controlled with great difficulty. The sinus was finally exposed, but on account of the collapse of the patient this was not opened. In spite of saline infusion the patient died the same night. No clot was discovered later in the sinus, but an autopsy was not performed.

REPORT OF THE TRANSACTIONS OF THE SECTION ON OTOTOLOGY OF THE NEW YORK ACADEMY OF MEDICINE.

REGULAR MEETING, DECEMBER 14, 1905, DR. GRUENING IN THE CHAIR.

Presentation of Cases.

Exhibition of a case of deformity of both auricles in an infant restored by plastic operation. By ARTHUR B. DUEL, M.D.

This patient is of interest, presenting as she does a case of unusual sagging of both pinnæ from a deformity of the cartilages, corrected by removal of posterior skin-flaps. As you will see from the photographs taken before operation, the usual wrinkle formed by the anti-helix was absent in its upper half, leaving no dividing line between the cavum conchæ and scaphoid fossa. Grasping the skin on the posterior aspect of the ear at different points and carrying it back nearly to the hair line, it was found that a wrinkle was produced corresponding to the anti-helix and giving the appearance of a normal ear. These points were marked and the intervening elliptical piece of skin removed without cutting the cartilage. The skin edges were then brought together by interrupted sutures. Healing by first intention took place, resulting in perfect correction as you see it.

It has been recommended in the correction of such marked deformities that a piece of cartilage be removed. While the danger of a resulting perichondritis should not be too greatly magnified, it is, as we all know, possible that such an accident might occur, resulting in a deformity much more disfiguring than the

one we aim to correct. I therefore thought it might be interesting to show that such a marked deformity might be corrected without cutting the cartilage.

Dr. LEDERMAN mentioned a similar deformity which he had treated in an adult, and which had interfered materially with the patient's hearing. The deformity was caused by a large sebaceous cyst situated at the posterior surface of the auricle and by its weight caused the auricle to fall forwards, thus obstructing the external auditory canal. The growth was as large as a hen's egg. After removing it, a V-shaped piece of skin was removed over the mastoid at the upper border (base) and the auricle was stitched to this site. An excellent result followed. No cartilage was removed.

Exhibition and report of a case of thrombosis of the lateral sinus and internal jugular vein, with metastatic involvement of the knee-joint. Operation and recovery.

By JOHN R. PAGE, M.D.

This patient is thirty-eight years old, was treated for syphilis eighteen years ago, and had delirium tremens three times in the last three years.

On February 6th aural examination was made and history obtained of intermittent pain and tinnitus in his right ear for the past two months. Examination revealed a large polyp in the middle-ear, scant foul discharge, and no mastoid tenderness; no pain and no headache.

On February 8th he had a chill and a rise of temperature to 104° by mouth, and complained of intense pain on the right side of his head. On the following day I was sent for and advised immediate operation. Urinalysis showed presence of albumen and a few granular casts. Eye-grounds were normal.

Mastoid was opened under chloroform anæsthesia, and beneath a hard unperforated cortex pus was found. The inner plate was softened and a perisinuous abscess, with granulations on the sinus wall, extended from an inch behind the knee of the sinus downward over its vertical portion.

A complete "radical" operation was done, and the sinus, which was apparently distended and felt very hard, was incised.

The wall was almost 5mm thick and in the contracted lumen a soft dark-colored clot was found.

Scissors were then introduced and the vein laid open through-

out its whole exposure without encountering any flow of blood from either end. After a curette had been passed into the lumen of the vein for a half inch towards the torcular a considerable flow of blood was established. The same procedure was hurriedly followed below, but there was no bleeding.

The internal jugular was excised from the clavicle to the base of the skull. The vein was filled with fluid blood and its walls were apparently not thickened. After excision of the vein a curette was passed into the sinus down towards the bulb and finally a fair flow of blood was obtained from that direction.

On the day after the operation the patient complained of a troublesome cough and a slight pain in the right knee. Examination failed to reveal any other signs of inflammation.

On the third day he complained of pain in his left side and there, over a small area, friction sounds and diminished breathing were noted. Two days later his pulmonary symptoms subsided, and the pain began again in his right knee. The joint soon became swollen and tender and failed to respond to any conservative treatment.

February 22d (twelve days after operation) he had a chill followed by temperature of 104.4° . An incision was made on the outer aspect of the knee-joint and three or four ounces of sero-purulent fluid were removed. Great relief from pain was afforded, but on the following day he had another chill and temperature of 105.2° .

He was finally persuaded to enter the New York Hospital and remained there three weeks.

During the first week his temperature on one occasion rose to 103.8° ; aside from that it varied from 100° to 102° ; second week from 99° to 100° ; third week it gradually fell to normal, where it remained.

The following is copied from his hospital record:

"Feb. 25th.—Leucocytes 13,000. Differential: Polymorphonuclears, 79 %.

"Lateral incision was made on outer side of right knee. Thick discharge evacuated. Irrigated with salt solution. Rubber tube inserted. Wet bichloride dressing. Specimen from discharge sent to laboratory."

March 2d.—Laboratory report: "Diagnosis: purulent arthritis. Specimen consists of two small pieces of yellowish-gray soft

tissue. Sections show : partly synovial fringes densely infiltrated with small polynuclear cells, and partly free fibrino-purulent exudate.

"Blood culture.—Bouillon Flask I: Staphylococci. Agar plate: Staphylococcus aureus (pure). Bouillon Flask II: Sterile 48 hours."

Dr. Dixon of the New York Eye and Ear Infirmary reports the vein as follows :

"Numerous colonies which appear to be staphylococci are found in the wall, especially in the upper portion of the vein, and a few well-marked colonies of staphylococci are in the clot. It has been usual here to find them in the wall only and not in both. Specimen of fluid from the knee-joint showed on smear a large amount of pus with a few cocci present. On cultivation it was negative."

Discussion.

Dr. GRUENING inquired as to the manner in which the wound was treated, whether closed or left open, and Dr. PAGE replied that it was left open.

Dr. RICHARDS said that he had had the pleasure of seeing this case and that Dr. Page was to be congratulated on the good result which he had obtained. The points which had particularly impressed him were : the difficulty of making a definite diagnosis of thrombus after the sinus had been exposed ; that shortly after the attempt was made to dislodge the thrombus from the bulb prior to jugular resection there developed a metastasis of the knee-joint ; that the internal jugular vein at the time of operation appeared normal and gave no evidence of being involved in extensive partial thrombosis. Had the attempt at establishing a return flow from the bulb prior to jugular resection succeeded, a large portion of the thrombus would have been left in the jugular vein. The case illustrated the danger of trying to dislodge a thrombus from the vicinity of the bulb in order to obtain a return flow from below before the removal of the jugular vein.

A brief report of a case of acute mastoiditis presenting several interesting features. By ROBERT LEWIS, Jr., M.D.

The patient, a young man, aged twenty-three, in excellent physical condition, accustomed to out-door life and athletics, walked up Madison Avenue for over a mile in a severe snow-storm, on the 30th of January last.

The next morning he was awakened by a severe pain in the right ear. I was out of town when sent for and consequently did not see him until between 8 and 9 o'clock on the evening of the 31st. Hot irrigations had been used during the day, and the pain had practically disappeared by the time I saw him.

Inspection showed the helix, tragus, and lobe of the auricle to have been frost-bitten, the membrana tympani somewhat congested, not markedly so, however, and with no bulging. The temperature and pulse were but little above normal, and there was no mastoid tenderness present.

The patient had slept the greater part of the afternoon.

I ordered small doses of calomel, to be followed by a saline in the morning, and a continuation of the hot irrigations.

The next day there were a recurrence of the pain in the ear, an increase in the redness, and a slight bulging of the membrana tympani, and also some mastoid tenderness. I did a myringectomy under nitrous-oxide gas.

The smears obtained from the exudate were examined by Dr. Dixon, and he reported that they showed a rather active streptococcus infection. On the 2d and 3d of February there was a free flow of a sero-purulent fluid from the ear and the mastoid tenderness still persisted. The highest temperature was $99\frac{2}{3}^{\circ}$, and the highest pulse rate was 72. On the 4th of February I found there was considerable drooping of the upper posterior wall, and an increase in the mastoid tenderness. I performed the usual mastoid operation in the afternoon of that day. The mastoid cells were markedly involved.

At the time I congratulated myself upon the thoroughness with which I was able to clean out all the cells, and I felt that I had a most satisfactory wound to deal with.

Following the operation the wound made rapid progress towards healing. At what date the membrana tympani healed I do not know positively, but it was within three weeks after the mastoid operation.

By the second week in March the mastoid wound had closed with the exception of a narrow sinus leading down to the antrum; at the bottom of this sinus I could, with a probe, detect bare bone. I tried every method I knew of to get this to heal, but could make no impression on it. On April 21st the condition was about the same that it had been for a number of weeks past. On April

22d the external wound seemed to be losing tone ; on April 23d I saw him in the afternoon, and on removing the dressings I found that at least one-third of the new-formed tissue filling the excavated mastoid cavity had melted away. No thick pus was present, but a sero-sanguineous discharge. The membrana tympani was intact.

I was somewhat alarmed at the new infection and determined to operate the next day, which I did the following morning at the Infirmary. On removing all the new-formed tissue I found apparently healthy bone in every direction. On exploring with a probe through the antrum in the direction of the bare spot which I had previously felt for the past number of weeks, I found it led to the incus, which was denuded of periosteum and lying loose in the tympanic cavity. The head and neck of the malleus were also denuded of their periosteum, and the tympanic cavity was fairly well filled with granulation tissue.

The radical operation was performed, and the patient made a practically uneventful recovery, except that there is still present a small posterior perforation which will have to be closed by a plastic operation.

The question of interest is, Why did the membrana tympani heal up while in the tympanic cavity a diseased process was going on ?

The myringectomy was done on the second day of the disease and the mastoid operation on the fifth day. The denuded and dislocated incus, which I discovered at the second operation, was not in such a condition at the time of the first operation, nor was the tympanic cavity filled with granulations at that time. So notwithstanding the fact that the tympanic cavity was drained from both its upper and lower boundaries the diseased process still persisted, and yet the membrana tympani healed.

Never before having seen such a condition, I have taken the liberty of presenting the case for your consideration.

Dr. DENCH remarked that he had seen the same conditions present.

Infective sinus thrombosis. A Discussion of Certain Views Recently Advanced. By P.D. KERRISON, M. D. (Published in full in February number of these ARCHIVES.)

Discussion.

Dr. RICHARDS said that he had listened with interest to Dr. Kerrison's paper but there were several points to which he did not agree. He did not think that any one would open a sinus merely because it had granulations on it. The statement made in the paper referred to by Dr. Kerrison was that, when we are dealing with a suspicious sinus, *i. e.*, one which from the physical signs we have reason to believe thrombosed, it is best to open the sinus even though there are no symptoms; that to return these suspicious cases to bed to await the development of septic symptoms, *i. e.*, to await the disintegration of the thrombus and the passing of the disease from a local into a general condition, merely that a more definite diagnosis might be made, was an absolutely dangerous practice and one which would cause us to unnecessarily lose many of our cases. He had seen many cases lost through this practice. He did not agree with Dr. Kerrison that the time for elective operative interference in sinus thrombosis was when the disease was manifesting itself through symptoms of septic absorption. Referring to the remark made by Dr. Kerrison, that the method of exploring the superior petrosal sinus had not been stated, it may be said that in order to test the patency of the superior petrosal it is only necessary to remove the sigmoid groove to a point beyond the point of entrance of the superior petrosal into the sigmoid to block the flow from the torcular at this point, and also from the bulb end of the sinus below and from the emissary vein. The procedure is so simple if the anatomy is known that it seems unnecessary to state the method of performing it. Dr. Richards said that exception was taken to his regarding the inferior petrosal sinus as the continuation of the internal jugular vein. He was well aware that the inferior petrosal did not form with the internal jugular a perfectly straight line nor, as Dr. Kerrison had stated, an angle, but a curve. The question, however, was one of hydraulics; that from this standpoint the inferior petrosal was the one vessel which should be so regarded, as in direction it most closely approximated the jugular, and in addition there exists between the two vessels no anatomical arrangement which acts as a hindrance to the influence of aspiration upon the inferior petrosal, while between the sigmoid sinus and the internal jugular vein there is interposed an

hydraulic obstruction, a goose-neck mechanism which forbids our regarding the sigmoid in that light. Dr. Richards did not think that the position of the patient's head influenced to any extent the rapidity of the current in the inferior petrosal sinus, nor that gravity played any particular part in the blood flow of the intracranial sinus system. His reasons for regarding the inferior petrosal sinus as a governor or as an arrangement through which the flow in the intracranial venous sinuses could be influenced through aspiration had been stated in the paper.

Dr. KERRISON, in reply, said that Dr. Richards seemed in one or two points to have misunderstood his paper. He had not said, or intended to say, that Dr. Richards's directions as to the method of exploring the sinus were not clear. What he did say was that Dr. Richards advocated free opening of the sinus for the purpose of determining a suspected clot but gave no limit as to how this extensive exploratory operation should be terminated in case no clot could be found. Dr. Richards in his discussion had thrown out gravity as influencing current rapidity in the sinuses; this was a distinct change of view as in his (Dr. Richards's) paper the sharp declivity of the inferior petrosal sinus is mentioned as one of the forces determining a particularly rapid current in that vessel. Dr. Kerrison agreed with the view now expressed by Dr. Richards in his discussion, *i. e.*, that gravity is without influence upon current rapidity in various sinuses. Referring to Dr. Richards's statement that the rapidity of the current in the inferior petrosal sinus was altogether a question of hydraulics, Dr. Kerrison said that if hydraulic pressure varied in the different sinuses such differences could be explained solely by the distribution of the cerebral veins. The right lateral sinus, for instance, usually represented the direct continuation of the superior longitudinal sinus. The superior longitudinal sinus receives all the superior cerebral veins from the convex and mesial surfaces of both cerebral hemispheres; this blood could not flow forward toward the foramen cæcum, and must flow backward toward and through the right lateral sinus. The left lateral sinus, on the other hand, represented the continuation of the straight sinus which receives all the blood from the deep cerebral veins. The hydraulic pressure due to the influx of blood from the above sources must be very great and was augmented by the blood from some of the inferior cerebral veins and the superior petrosal sinuses which flowed directly

into lateral sinuses. The inferior petrosal sinuses received part of the blood from the cavernous sinuses; they were the only intracranial sinuses into which none of the cerebral veins had been traced. He could see absolutely no grounds for believing in a preponderance of hydraulic pressure in the inferior petrosal sinuses. In reply to Dr. Richards's question as to his operative experience in sinus thrombosis, Dr. Kerrison said that in the Manhattan Eye and Ear Hospital there had been in the past ten years 12,700 cases of suppurative otitis media and only 23 cases of sinus thrombosis, and that none of these had come under his care; and that in a fairly good operative experience he had not found it necessary to open the sinus, either for sinus thrombosis or as an exploratory measure. Dr. Kerrison in conclusion said that he had not meant to imply that Dr. Richards would open every sinus presenting a thickened dura covered with granulations. He did believe, however, that to advocate opening every suspected sinus, without giving any definite statement as to the symptoms or physical signs justifying such a suspicion, was dangerous advice which, if generally accepted, would be likely to result in the transferring of many patients to a land where sinus thrombosis does not exist.

The differential diagnosis between some of the serious sequelæ of purulent otitis media. BY FRANK ALLPORT, M. D., Chicago.

REGULAR MEETING, JANUARY 11, 1906, DR. GRUENING IN THE CHAIR.

Presentation of Cases.

Presentation of a case of traumatic mastoiditis. By SEYMOUR OPPENHEIMER, M.D.

C. F. O., aged forty-four years, was injured on May 11th by a dynamite explosion following a railroad accident at Harrisburg. He was thrown to the ground and stunned, but did not lose consciousness. Upon arising he noticed a sharp pain in the left ear and noticed a discharge of blood therefrom. No previous disease of the ear had been present. On the afternoon of the 13th examination showed a slight inflammatory œdema of the external auditory canal, a moderate amount of sero-sanguineous exudation being present at the lower part of the same. The drum mem-

brane was considerably congested with here and there ecchymotic spots. Two crescentic-shaped perforations were found, one situated anterior to the malleus and the other posterior, the marginal rings of the perforation showing dried blood-clots. Flaps of the membrane were detached, retracted, and slightly adherent to the inner wall of the tympanum. Hearing distance considerably diminished as per tests of watch, tuning-forks, conversation, and whisper voice. Slight elevation of temperature was present at times. A very faint degree of tenderness was experienced over the mastoid region, but this became steadily more pronounced when deep pressure was made. The discharge speedily became purulent and profuse, and neither diminished in quantity nor quality in spite of constant and careful attention to the ear. On the passing of a probe at subsequent periods through the perforation, roughened areas of bone were detected over the upper wall of the tympanum and involving the ossicular chain.

On July 24th, under general anæsthesia, the malleus and incus were removed and the tympanic cavity thoroughly curetted. In the region of the aditus ad antrum bare bone was distinctly felt, and this area was subjected to very forcible curettage, but it was considered at that time that in all probability the ossiculectomy would prove of no avail in checking the suppuration, as it was thought that mastoid involvement had already taken place. The patient experienced no ill effects from the operation other than the persistence of vertigo for some time, due, in all probability, to the forcible impaction of the stapes in the oval window. For the following ten weeks various forms of intra-tympanic treatment were employed for the cure of the suppuration, but without avail. During this period the patient suffered but little from aural pain, and no external evidence of mastoiditis could be ascertained other than dull pain upon deep pressure over the bone, which pain, however, could be elicited at all times. The temperature remained within the limits of normal.

On October 3d an opening was made in the mastoid process in the usual manner. The mastoid was of the markedly cellular and pneumatic type. The antrum and adjacent cells, particularly those of the tip, were found to contain large quantities of purulent material, rather offensive in odor, masses of granulation tissue, and large areas of necrotic bony tissue, exposing, on its removal, the dura over the sigmoid sinus and the middle cerebral region.

The posterior bony wall of the osseous meatus was extremely friable and necrotic, exposing on removal the facial nerve throughout a considerable distance of its course in its bony canal. Directly above the aditus ad antrum a distinct fissured fracture about $\frac{3}{4}$ of an inch in length was seen. The edges of the fracture showed it to be recent in origin. The cavities of the mastoid, aditus, and external auditory canal were thrown by this operative procedure into one large cavity. A flap of the Jansen-Stacke type was then cut from the membranous portion of the auditory canal, which flap was securely held in position by sutures, filling up, in a measure, the enormous bony cavity, the Eustachian opening of the cavity having been subjected to a thorough curettage in order to bring about complete closure of its walls. The posterior wound was then completely sutured and all dressings made from the enlarged auditory meatus.

At the present time, twelve weeks after the operation, epidermization of the cavity is progressing rapidly. The hearing remains greatly diminished.

The features of extreme interest in the case are the history of the development of mastoiditis following a distinct traumatism; the finding of a fissured fracture within the tympanic cavity; the futility of the conservative treatment, both medical and surgical, as applied to the intratympanic space in the attempt to avoid mastoid involvement; and the absence of all definite physical or local evidences other than the persistence of the suppuration, in the presence of an unusually extensive disease of the mastoid and its adnexa.

Discussion: Dr. EMIL MAYER said that the case presented by Dr. Oppenheimer had an interest from another point of view than that usually occurring. He referred to the medico-legal aspect.

In this case there were many reasons for the conclusion that the concussion, and that only, was the cause of his condition.

But if we might suppose a similar case in which we saw a patient two days after an alleged accident, the question might arise, How did we know that the patient was not at the time of the accident the subject of an acute inflammation?

This might be a hard question to answer, but in this case there was, in the speaker's mind, an answer.

The patient has a deviation of the nasal septum and a hyper-

trophy of the middle turbinate on the opposite side to the ear disease, and he would say that, in his opinion, all other things being equal, the ear affection would be most apt to be on the side which is stenosed.

In this particular instance, Dr. Mayer said that he had seen the patient before the ossiculectomy was done and had noted the torn membrana tympani, behind which the pus was welling out.

It was the proper thing to do to try the simpler operation, and that failing, the mastoid operation.

He thought that Dr. Oppenheimer deserved much credit for his successful treatment of this case.

Dr. GRUENING, referring to Dr. Mayer's suggestion that the otitis media was to be looked for on the side where there was a deviation of the septum, said that he thought this statement was too sweeping, and that he himself did not believe that the deviation of the septum had anything to do with the otitis. He did not think that the statement should go unchallenged, and thought that discussion on this point might be advisable.

Dr. MAYER asked if the Chairman wished to be understood as saying that the presence of anterior stenosis of the nose had nothing whatever to do with ear disease on the same side?

Dr. GRUENING said that he did not think the middle turbinate or septum had anything to do with the condition of the ear disease. He believed that the enlargement of the lower turbinal bone, especially the posterior end, had something to do with the encroachment upon the pharyngeal end of the Eustachian tube and might be followed by ear diseases.

Report of a case of mastoiditis and sinus thrombosis in an infant of twelve months. Operation. Recovery. By SEYMOUR OPPENHEIMER, M.D.

The recognition of sinus thrombosis in adults presents comparatively few difficulties when the condition is uncomplicated by other intracranial conditions, but in young children the reverse is usually the case, and when such a condition does complicate a mastoiditis it is difficult to recognize the vascular involvement, particularly during its earlier stages. The following case presents several points of importance, especially on account of the destruction present in the interior of the temporal bone with involvement of the sigmoid sinus; and yet at times during the

course of the disease the symptoms were so slight as to scarcely attract attention.

A. L., age twelve months, had a severe coryza when eight months old, accompanied by a marked degree of nasal stenosis, so that it was necessary before each nursing to cleanse the nasal chambers and reduce the congestion with adrenalin. At the end of a week the coryza disappeared and the child was in good condition when, after a restless night, the temperature rose to 102° . Examination revealed nothing abnormal except the left ear, which showed marked congestion of the membrana tympani and bulging of the lower segment. The membrana tympani was incised and a large amount of pus was released under pressure, and in a few hours the temperature returned to normal and the child seemed comfortable. At the end of ten days the discharge had entirely ceased, the incision in the tympanic membrane had healed, and in all respects the child appeared perfectly normal. Four months later the child was again brought for treatment with a history of having five weeks previously had a slight coryza followed by restlessness, pain in the left ear, and after a few hours slight purulent discharge. This continued until a week ago, when the discharge became scant. During this time he lost considerable weight, was fretful, slept irregularly, and would often refuse to nurse. Examination showed a scant, dark, offensive discharge in the canal, a large perforation of the inferior segment of the tympanic membrane; and pressure behind the auricle produced evidences of considerable pain. The temperature was normal. The condition of the ear and the asthenic state of the child indicated serious mastoid involvement and immediate operation was advised, but consent to this was not obtained. On the following day the temperature in the morning rose to 104.8° , pulse 130, respirations 32. Five hours later the temperature was 99° ; pulse 100, but weak; respirations 28, and the child looked very much worse, while the auricle was beginning to project and the mastoid region was becoming swollen. The conditions indicated that the lateral sinus had become involved, and the parents were informed that immediate operation was imperative. This was accordingly performed the same day under ether anæsthesia, the child being in a very serious condition, the temperature having risen just before operation to 104.3° . After incising the skin and opening the cortex the latter was found to be exceedingly thin over the antrum,

dark in color, and broke under very slight pressure from a spoon. The antrum was immediately under the surface of the bone and was full of granulation tissue and disorganized bone debris, while the mastoid, in great part, was necrosed and softened. This tissue with some pus was removed, the entire mastoid cortex was cut away, and as the aditus contained much granulation tissue the upper posterior canal wall was partly removed. After removing all of the cortex the carious osseous tissue over the sigmoid sinus was taken away, exposing the sinus at the bottom of the bony cavity. On palpating the sinus no pulsation was felt, so it was opened and a septic clot was found which was beginning to undergo disintegration. This was removed with the curette. Considerable difficulty was found in obtaining the blood-flow from above, but this was finally accomplished, and while the bleeding was controlled by pressure here, the clot lower down was removed and a free passage secured. The child was in a very bad condition, so hypodermoclysis was employed, and after rapidly removing all the necrosed bone that could be found, the wound was dressed in the usual manner. For two days following the operation the heart was weak and irregular, the pulse being between 130 and 160 and the temperature varying from 97.5° to 102° . Then the condition greatly improved until the fifth day, when the temperature suddenly rose to 104.5° . The mastoid was re-opened and a few drops of pus found in contact with the sinus. This was removed and fresh dressing applied, and the child rapidly progressed to recovery, the mastoid wound healing in seven weeks.

Of the various symptoms indicative of mastoid involvement, rigors, followed by a rapid rise in temperature to 104° or 105° , is one of the most characteristic; but in the very young child it is practically impossible to obtain any evidence of a definite chill, and considerable dependence must be placed, when the mastoid is involved, upon the frequent vacillations of the temperature over several degrees. The pulse rate is often fast, but later becomes slow and weak and usually offers little information. When the suppurative changes are extensive, the skin may show evidences of the general pyæmic condition, accompanied by disturbances of the alimentary canal. Vomiting, optic neuritis, and some retraction of the cervical muscles aid the diagnosis in adults, but in the infant the two former symptoms cannot be considered, while the latter is rather indicative of some meningeal involve-

ment. Should the thrombus involve adjacent venous channels, characteristic local symptoms are generally found, while should it extend down through the channel of the internal jugular vein, inflammatory band-like processes will develop along its course and the cervical region on the same side will be painful upon pressure. As these symptoms develop late, however, the most reliable diagnostic symptom (in the very young child) of sinus involvement during the course of the suppurative otitis media is undoubtedly the rapid, exaggerated oscillations in the temperature range, so that it is highly important that the temperature be taken at least every two or three hours, both by day and night, in order that such changes be not allowed to continue without recognition.

Discussion: Dr. LEDERMAN said that apropos of the difficulty of diagnosing otitis suppurativa in children, he had recently been called to see a child in a comatose condition, temperature 106° , with some indications of spinal meningitis, and the question was whether it was a case of cerebro-spinal meningitis or aural affection. On examination of the left ear the only clinical fact was the evidence of a slightly bulging superior quadrant, which was red. He advised immediate incision of the drum as a matter of exclusion. Toward evening of the next day there was a slight serous discharge from the ear referred to, the temperature returned to normal, and the child recovered without further trouble. Had not the incision of the drum been made, the child would probably have been treated for cerebro-spinal meningitis without recognizing the symptoms of the otitis. It was therefore a question of objective, not subjective, temperature in a child so young.

Dr. KENEFICK inquired whether the temperature was taken per rectum, and also asked Dr. Oppenheimer to explain a little more clearly how he used the gauze drainage.

Dr. OPPENHEIMER replied that the temperatures were all rectal. In regard to the drainage, he had simply introduced a gauze wick into the auditory canal to the membrane. It was not packed, but simply inserted to facilitate drainage.

Dr. EMERSON said that he would like to corroborate what had been said about the difficulty of making a diagnosis in a small child. He had recently seen a child ten months of age who had been under the care of two physicians for three weeks, and had been treated for gastro-enteritis. Finally they declared that they

did not know what was the matter with the child, and another physician was called in, who made a diagnosis by exclusion, finding no other cause for the temperature and condition, and then asked Dr. Emerson to examine the ear. This was done, but no bulging appeared, and the only reason for doing a paracentesis was the lack of lustre of the drum, which appeared different from the other side. Paracentesis was recommended to clear up the diagnosis, and the result was very gratifying. The child promptly recovered.

Dr. TOEPLITZ said that Dr. McKernon has reported five cases of children, four of whom recovered and one died. The diagnostic point he made was the rise of temperature in an ordinary otitis, which was not in accordance with the usual course in otitis media purulenta, and was the only symptom which led him to investigate the sinus. Dr. Toeplitz also referred to a case which he himself had recently treated in a child five months of age, where there was a rise of temperature after he had operated upon the carious mastoid. A radical mastoid operation had been done. The child had done well for a day or two and then there was a gradual rise of temperature up to 103° . On the fourth day the child was again operated upon and the sinus exposed. No pus was found. The child died after the operation, probably from meningitis. The point that he wished to make was that the ordinary rise of temperature, even to 103° or 104° , would not alone lead to a diagnosis of sinus thrombosis; the periods of intermission were important.

Dr. KENEFICK said that the reason why he had asked whether the temperature was rectal was that in cases of children, following mastoid operation the temperature frequently rises to 105° or 106° . The interval between such rises was very important, for they do not always oscillate between $105-106^{\circ}$ and $101-102^{\circ}$ within three or four hours. Sometimes these intervals are from day to day. The temperature may remain at 106° or drop at night to $101-100^{\circ}$, and go up the following day, and there would be no oscillations within two or three hours. On the other hand, such oscillations do occur, and this question was one of great importance, and calls for much deliberation, knowledge, and experience, combined with conservatism. He had seen the most alarming charts following operation for mastoiditis where pneumonia was suspected for days but did not develop, and where this was soon

followed by normal temperature. Had he been hasty, he would have investigated and found nothing. He felt that we should be sure of our ground and exercise great conservatism before investigating the sinus in infants and children.

Dr. ARNOLD KNAPP said that he had been very much interested in this report of the case, and would like to ask whether Dr. Oppenheimer had observed any abnormal position of the sinus in the child's temporal bone. Sinus thrombosis is unusual in a child so young; an abnormal position of the sinus might be a contributing factor in the sinus thrombosis. If he understood correctly, the Doctor said that he made the diagnosis on the simple physical sign that there was no pulsation. Nothing was said, however, about any change in the aspect of the sinus wall, but on opening the sinus a disintegrated clot was found.

Dr. OPPENHEIMER replied that if anything the sinus was somewhat posterior rather than anterior. The diagnosis of sinus thrombosis was made before operation, and no pulsation was felt over the sinus. The sinus was opened with the desire of excluding the presence of sinus thrombosis. He did not think one could always rely on the appearance of the sinus, except in those cases where there was an extreme thickening of the sinus wall or evidence of an ulcerative process involving the sinus. The diagnosis had been made previously by reason of the great variation of temperature within a limited period of time, and for that reason the sinus was exposed and opened.

Dr. KNAPP said that he did not doubt but that the diagnosis of sinus thrombosis had been made before operation, but simply thought it was remarkable to find a disintegrated clot with the surface of the sinus normal, because that does not exclude the presence of a lesion of the wall lower down near the bulb.

Dr. CHAMBERS said that Dr. Kenefick had spoken of being conservative. He then told of a case occurring just before Christmas where there was a mastoid without otitis media purulenta, and the condition was such that he thought it well to let it go along until he could be more satisfied that there was a cerebral abscess. The dura looked so healthy over the lobe and the sinus appeared so healthy that it seemed wise to wait for further symptoms. This was on Wednesday, and on Sunday, when symptoms were disappearing, the patient suddenly died. He did not think conservatism was always wise, and believed now that the

patient could have been saved if the apparently healthy brain had been explored.

Dr. RICHARDS said that it was not unusual to find the sinus normal in appearance, and on opening it find it occupied by a clot.

Dr. KENEFICK said he had spoken particularly of the condition in children.

Dr. GRUENING said that the oscillation in temperature is not always present. At times the temperature is high and remains high. He had seen a case in a child four years old where after operation the temperature reached 106° and remained there for six days. Many physicians were called in to make a diagnosis—pediatrists, aurists, and other specialists. They were all of the opinion that there was a clot in the sinus somewhere, and there was a high temperature of 106° without any oscillation. It was difficult to know on which side the clot was. Both sinuses had been exposed at the time of the mastoid operation. One sinus was completely covered with granulations, the other only partially. It was affirmed that the thrombus would be found in the latter, and it was found there. The patient recovered.

Report of a case of mastoiditis without any manifestation in the middle ear or external auditory canal. By JOSEPH A. KENEFICK, M.D.

This case occurred in Dr. Kenefick's service at the N. Y. Foundlings' Hospital. Richard A., two years old, on November 20th last was seen to have an area of slight redness back of his right ear, superficial in character and thought at first to be an eczema. There was no pain or tenderness on pressure, no discharge from the ear, and the child was apparently in perfect health at the time and was known to have been free from all disease for a period of three months previously. There were no indications of impaired hearing. On November 21st, the day following, the area of redness and swelling had extended some and there was slight tenderness on pressure. There was still no discharge from the ear, and no change in the appearance of canal or tympanic membrane. The temperature was normal and to all appearances the child was in perfect health and spirits. On the next day, November 22d, the swelling and redness had further increased, and a morning temperature of 101° F. had fallen to normal and remained there throughout the day. The auricle was now slightly displaced forward, with characteristic deformity; the

posterior auricular swelling now felt boggy to the touch; but the absence of continued fever, the slight tenderness, the normal canal and tympanic membrane, and the patient's general condition of unimpaired comfort and spirits were features so interesting and so unusual that it was concluded operation could be safely postponed for fifteen or twenty hours and developments in the middle ear awaited. The patient ate well and slept all night. The following day, November 23d, examination of the tympanic membrane and the canal walls showed them apparently perfectly normal, and there were no indications of deafness. The external swelling, however, had increased in size and gave distinct signs of fluctuation. It was decided to open it, and a large subperiosteal abscess containing about three drachms of yellow pus was found directly over the mastoid antrum and evacuated. Directly beneath the abscess the cortex was found necrotic over an area about the size of a dime. The bony tissues immediately beneath were softened down to the mastoid antrum, but no free pus was seen either in the antrum or the aditus. Indeed, so sound was the bone at this point that the spoon of a small curette was broken in enlarging the aditus. All the tissue appeared to be engorged with blood and bled freely, but no pus could be seen in the direction of the middle ear. The mastoid process was completely removed and the wound dressed as usual, the operation lasting thirty minutes. When the dressings were removed on the fourth day, the tympanic membrane had evidently ruptured and the packing in the canal was wet with yellow pus.

The case was interesting on account of several unusual features. Dr. Kenefick said that he had never before seen a post-auricular abscess not associated with a well-developed acute process or purulent process in the middle ear. In this case there was nothing of the kind to be seen. The mode of infection was also an interesting question. Primary abscesses in the post-auricular glands seldom occur in children. The method that suggested itself to him was that, the child being under two years of age, the infection had reached the middle ear through the respiratory tract, and the infective micro-organisms must have escaped from the middle ear by way of the vessels or the lymphatics and met particularly inflammable tissue in the post-auricular glands, and the process here had advanced more rapidly than the process in the middle ear. In these cases when one opens into such a subperiosteal abscess one is justified in opening into the mastoid

antrum, whether or not there is any indication of disease of the cortex.

Report of a case of radical operation for chronic otitis media suppurativa, followed by a secondary operation for removal of the internal ear, and later by an operation for the evacuation of a cervical abscess and an epidural abscess of the cerebellum. Death. By HARMON SMITH, M.D.

Italian, age fifty-eight, sent to me August 14, 1905, by Dr. Munger, of Waterbury, Conn., with the following history: Ear-ache had begun four weeks previously in the left ear, followed by discharge, which soon ceased. Pain continued and extended over greater surface of head. Dr. Munger performed a myringotomy and evacuated a quantity of dark, foul-smelling pus. Patient returned a week later with a partial facial paralysis and renewal of the symptoms, when a second myringotomy was performed. After three or four days of comparative comfort the symptoms reappeared with greater intensity. He was then sent to me for operation, and upon examination there were found the classical symptoms of mastoid involvement. In addition, the patient was dizzy, unsteady in gait, and unable to stand with eyes closed. Immediate radical operation was performed at the Manhattan Eye and Ear Hospital. Considerable necrosis existed in the middle ear and mastoid, and the facial canal was necrosed at intervals exposing the nerve. The progress was favorable, except the dizziness and optic neuritis, and the temperature and pulse reached normal seven days after operation. Three weeks after the operation he returned to Waterbury, when everything appeared to be progressing toward a favorable recovery. Here he was treated for one month, during the latter part of which granulations sprang up quickly in the lower portion of the wound, over which neither the curette nor silver nitrate could gain headway. In addition, the staggering gait was more marked, the facial paralysis remained complete, and there were hoarseness and difficulty in swallowing, which I concluded was a beginning glosso-pharyngeal paralysis. He was placed in the hospital, where silver nitrate and bichloride and alcohol were used in an attempt to overcome the granulations. The laryngoscope showed a complete paralysis of the abductor and adductor muscles of the larynx. There was also a paralysis of the left soft palate. A piece of granulation tissue submitted to Dr. Wright showed such an excessive amount of nucleus fragmentation that he concluded the case to be one of

syphilis. In addition to this, the neurologist pronounced the glosso-pharyngeal paralysis the result of a specific lesion of the dura of the bulb. Deep injections of bichloride of mercury were advised, together with saturated solution of potassium iodide. The paralytic symptoms improved under this treatment, but the ear conditions remained the same, and on November 10th a second operation was performed on the ear. Dead bone was found over the roof and floor of the tympanum, and the necrosis was followed into the labyrinth and continued until the semicircular canals and cochlea were removed. Unhealthy dura was also exposed down over the cerebellum for a considerable distance, but at no point was healthy dura reached. Believing, however, that I had gone sufficiently far for the dura to regain its normal condition, further removal of bone was discontinued. The sinus was not disturbed. The patient's condition markedly improved after this operation, and a few days following his gait improved, the dizziness disappeared, and the glosso-pharyngeal symptoms markedly cleared up. His condition continued good until December 6th, nearly a month after the second operation, when there was a suspicious rise of temperature. These septic symptoms abated until December 15th, when they again appeared, and continued until December 22d, when I performed a third operation. The patient at this time was dull and incoherent, temperature 104° . I followed the unhealthy dura of the cerebellum downwards and evacuated a small cervical abscess, but not believing this to be the occasion of such septic condition I continued to the foramen magnum and evacuated an epidural abscess at the base of the brain, containing about an ounce of creamy pus without odor. Believing I had at last reached the end of my difficulties, I dressed the wound and returned the patient to bed. His temperature dropped, by 4 A. M., to 98° axilla, pulse 96. His mental symptoms cleared somewhat, so that he knew his son and myself, and talked fairly rationally.

His temperature remained below 100° for 12 hours, when it started on an upward journey until it reached 104° on December 28th, six days after operation, when he died.

Permission was given to examine only the brain, which showed the following conditions. Dura tense and injected, and over the wound thickened, rough, and dry. The antero-inferior portion of the left tentorium was a quarter of an inch thick and contained an evacuated abscess cavity, the inner walls of which

showed two perforating erosions. The lower bony wound was the seat of extensive necrosis, reaching half way around the foramen magnum, and probably of specific nature. Ventricles contained six ounces of purulent fluid. The Sylvian fissure showed purulent exudate extending as far upward as the fissure of Rolando. The base of the brain showed extensive purulent exudate with thickening of the lepto-meninges, especially that covering the bulb and crura. The optic chiasm was covered with markedly thickened pia arachnoid, upon which a fresh purulent exudate could be seen. Microscopically there were few evidences of bacteria—only a few isolated diplococci. In many places, especially along the ventral fissure of the medulla, the pia arachnoid was enormously thickened and showed a previous condition upon which a fresh purulent infiltration had been engrafted.

Report of a case of double mastoiditis with sinus thrombosis on the left side, presenting several interesting features. By EMIL GRUENING, M.D.

The patient, a young boy, was brought into Mt. Sinai Hospital with a discharge which had existed for three years. For a few days prior to admission he had suffered from headache, vomiting, high temperature, and chills. His temperature rose to 105° and then dropped to 101° . In this condition he was brought to the hospital in an ambulance. Examination showed that he had a double mastoiditis, and he was operated upon. It was found that he had a softening of the bony covering of both sigmoid sinuses. The sinuses were exposed and the child was returned to bed. The temperature would rise as high as 105° , fall to 100° , and then rise quickly again to 105° . The boy was carried a second time to the operating table and both sinuses inspected, but nothing abnormal was found, only a little white speck on one sinus. Both sinuses seemed soft, still it was thought there might be a sinus thrombosis. The bone seemed to be healthy everywhere. His eyes were examined and both optic disks were found injected, but there were no definite indications for operation found. The next day the child again had a temperature of 105° and an optic neuritis was found on one side. It was well that he had been examined before. The sinus on the right side showed some change—some patches which looked white, while on the left side it looked normal. The sinus was opened on the evidence of the optic neuritis, and was found to contain an infected clot. The

jugular was tied, and the facial also, before the clot was removed. When an attempt was made to remove the upper clot, the anæsthetist said that he could not count the child's pulse, and that the operation would have to be interrupted. The sinus had not been completely exposed and clot could not be removed with the forceps, so a piece of iodoform gauze was pushed into the sinus and when this was withdrawn the clot came out with it, followed by a large gush of blood. The patient made a good recovery and was discharged from the hospital on the second of January. The interesting points of this case were the bilateral mastoiditis and the exposure of both sigmoid sinuses; the diagnosis of thrombosis of the left sinus made by the ophthalmoscope. Another feature was the removal of the clot by pushing iodoform gauze into the lateral sinus and then withdrawing it, followed by the clot.

Discussion.

Dr. LEDERMAN told of a case which occurred some years ago where the ophthalmoscope aided materially in hastening the proper treatment. The patient was a man with an acute otitis media suppurativa, who gave a history of being a laborer employed in ditching. The suppuration yielded under the proper treatment and the drum resumed a normal aspect. The patient was kept under observation because of a continued temperature which resembled the malarial type. There was a temperature of $103-104^{\circ}$ every other day, with chill, fever, and sweat. Plasmodia were found in the blood, but otherwise the examination was negative, and the temperature persisted. Hypodermics of quinine were given, but produced little effect on the temperature. There were no local symptoms of involvement of the mastoid or head, except some soreness on deep pressure over the region of the mastoid antrum, but this symptom was not constant. For a number of days the temperature persisted, running from 101° to 102° , and the oculist said he noted a beginning neuritis, though this was not definite enough to warrant surgical interference. Then the patient said he thought he felt more sensation over the antrum, but this symptom was not distinct. On the third day following the appearance of the eye symptoms, the oculist felt certain of the neuritis and exploratory operation was advised. While no disease of the cortex or cells was found, on reaching the antrum a few granulations were removed. Still no satisfactory cause for the trouble had been discovered and the wound

was about to be closed when probing revealed a soft spot on the floor of the antrum, and an epidural abscess was found, the size of a hickory nut. The patient recovered.

Some considerations on the circulatory disturbances, the result of ligation of the internal jugular vein in a case of sinus thrombosis. By W. P. EAGLETON, M. D. Published in full in this number of these ARCHIVES.

Discussion.

Dr. RICHARDS said that he had in a large number of cases of sinus thrombosis examined the eyes immediately before and after the removal of the jugular vein but had not in a single instance been able to observe any congestion of the retinal veins following this procedure. Some years ago he had operated on a case in which a completely obstructing thrombus extended from the torcular Herophili to the junction of the internal jugular and facial veins. Several days after the excision of the jugular (the lower portion was partly filled), papillitis was observed in the eye of the corresponding side. Papillitis had, however, existed in the opposite eye prior to operation, and it was doubtful if the second papillitis was due to the resection of the jugular vein. He had also observed a case in which, after the resection of a jugular containing a generous volume of blood, there developed a sudden violent but transitory mania.

REPORT ON THE PROGRESS IN OTOTOLOGY DURING THE SECOND QUARTER OF THE YEAR 1905.

BY PROF. ARTHUR HARTMANN, BERLIN.

Translated by Dr. ARNOLD KNAPP.

ANATOMY AND PHYSIOLOGY.

97. MOST. **Anatomical and clinical investigations on the lymphatics of the external and middle ear.** *A. f. O.*, vol. lxiv., pp. 189 and 233.

98. CITELLI. **On the structure of the human Eustachian tube.** *Archivio italiano di otologia*, etc., vol. xvi., Book 5.

99. GRASHEY. **An atlas of typical X-ray pictures of the normal man.** *Lehmann's med. Atlanten*, vol. v., München, 1905.

100. PASSOW. **On the functions of the labyrinth.** *Berl. klin. Wochenschr.*, 1905, Nos. 1 and 2.

101. NOLL. **A case of labyrinth necrosis.** *Dissert.*, Berlin, 1905.

97. The lymphatics of the external and middle ear were carefully examined by the injection method of Gerotas. By this method the distribution of the lymphatics was demonstrated over the auricle, the auditory canal, and the Eustachian tube, but not over the tympanum or the drum membrane. For these the investigations had to be carried on according to Kessel's method of impregnation. According to this there is a continuous capillary network which passes from the auricle and the external auditory canal through the drum membrane into the tympanum and the tube to finally reach the pharynx. The regionary glands of the external ear can be divided into four groups: 1. The pre-auricular glands, which receive the lymph from the neighborhood of the tragus as well as the anterior and superior periphery of the auditory canal. 2. The infra-auricular glands, which receive their supply from the lobules, the greater lower

part of the auricle, and the lower wall of the canal. 3. The retro-auricular glands, which receive the lymph from the greater part of the auricle. 4. The deep cervical glands along the internal jugular vein which receive the lymph from the posterior and partly from the lower auditory canal walls. This group of glands represents the second stage of the lymph supply of the external ear because the vessels from the groups 1 to 3 empty into group 4. The regionary groups of the Eustachian tube are the retropharyngeal glands and the deep cervical glands at the side of the common jugular vein. To demonstrate the regionary glands of the tympanic mucous membrane of the drum membrane, the author relies upon clinical examination, because anatomical investigations did not succeed. According to this, the lymph of the tympanic mucous membrane and of the drum has two passages: (1) into the lymph region of the external ear; (2) into the lymph region of the Eustachian tube. The latter path is of especial importance in the case of children in the first years. HAENEL.

98. This paper gives a detailed description of the histological structure of the human Eustachian tube, and is accompanied by three plates. RIMINI.

99. This atlas consists, in addition to a general treatise on X-rays, of 97 autotypes of X-ray photographs of the human body, which are so perfect as to furnish an excellent object to compare pathological conditions with. The first 13 pictures are especially of great interest to the aurist, because they represent very clear pictures of the head and face in all diameters. BRUEHL.

100. Six cases of one-sided labyrinth necrosis and one case of bilateral disease of the labyrinth were obtained out of the material of the Charité Clinic. Examinations for disturbances of equilibrium gave the following results, which do not agree in many respects with the well-known results of Wanner.

At the onset of the labyrinth disease most patients suffered from vertigo and disturbance of equilibrium. In only one case was there an absence of vertigo throughout the entire disease.

After recovery, which took place after a more or less extensive destruction or sequestration of the labyrinth, the following conditions were found: Subjective vertigo on rotation was absent

in four cases especially examined. On walking and standing with closed and open eyes, no swaying. On rotation in the various patients there was disturbance of equilibrium to a varying degree. Examination for nystagmus after active rotation also gave inconstant results. In two cases, like those of Wanner nystagmus occurred on rotation toward the healthy side in the physiologic manner, while it was absent on rotation towards the side without a labyrinth. In bilateral loss of labyrinth there was no nystagmus. The other three cases showed no irregular conditions.

On moderate rotation the nystagmus occurred in one-sided cases in the physiological sense, also on rotation towards the diseased side. The case with bilateral defect of the labyrinth remained free from nystagmus. An uncertainty and weakness of the muscles of the body on the affected side could not be demonstrated.

MUELLER.

101. Complete report of a case in which the right vestibule and the semicircular canal were removed in Passow's clinic. The patient showed no vertigo either at rest or during rotation about a vertical axis. Nystagmus on looking to the left during rest increased on rotation to the right, nystagmus on looking to the right principally in a physiological sense, *i. e.*, after active rotation to the left. No reduction of the muscular tone of the extremities of the affected side.

HARTMANN.

GENERAL.

a.—REPORTS.

102. FERRERI. **Report of the Ear and Nose Clinic of the University of Rome**, ii., 1904. G. D'Antonis.

102. This report for the year 1904 shows the activity with which the assistants and voluntary physicians work in this clinic under the excellent leadership of Ferreri.

The report consists of fourteen important papers treating various subjects of this specialty. The report contains 341 pages and can be recommended as extremely readable.

RIMINI.

b.—GENERAL PATHOLOGY AND SYMPTOMATOLOGY.

103. HAIKE. **Tuberculous ear disease in nurslings.** *Deutsche med. Wochenschr.*, No. 24, 1905.

104. GERBER. **On diseases of the walls in suppurations within bony cavities.** *Deutsche med. Wochenschr.*, No. 14, 1905.

105. RUGANI. **Disturbances of hearing caused by fever.** *Archivio ital. di otologia*, etc., vol. xvi., book 3.

103. Five cases of tuberculous ear disease were examined, which showed the first symptoms from the fifth week up to the seventh month, which resulted after several weeks or months in the death of the patient. In two cases the possibility could not be excluded that the sputum containing the bacilli could have passed through the Eustachian tube into the ear and thus have led to the ear lesion. In the other cases, however, it was clear that the tuberculosis of the ear was a primary process. The port of entry was the mouth and the pharynx, though in distinction from adults a tuberculous primary lesion could not be recognized. Moreover the author states that the Eustachian tube may itself be the seat of disease in nurslings, while in adults it generally serves simply for the passage of the tuberculous sputum without itself becoming infected. To the question of the origin of tuberculous ear disease owing to the rarity of primary peritoneal tuberculosis, the milk containing bacilli does not enter into the question, but the infection takes place by direct contagion from a tuberculous mother or nurse by kisses, cleansing of the mouth, etc., and the disease of the tube, being a post-embryonic path of infection, speaks against the possibility of inheritance from the mother.

NOLTENIUS.

104. This paper is based upon cases of complicated diseases of the ear and of the nose: sinus thrombosis, brain abscess, and a case of diffuse meningitis and rhinogenic brain abscess and orbital complications. GERBER states that though the brain complications originating in the mastoid process are very much more frequent than those which correspond, namely, resulting from an involvement of the walls of the frontal sinus, the relative benignity of the frontal-sinus operations is very much lessened if the orbital and then in a second line the central walls are diseased and the extension of the suppuration to the surrounding walls finds no resistance.

NOLTENIUS.

105. This interesting paper gives the results of an examination of the ear in 50 cases of febrile conditions. The deductions are important and not suited for a short review.

RIMINI.

C.—METHODS OF EXAMINATION AND TREATMENT.

106. NEUMAYER. A protecting apparatus for the physician during the examination of the upper air passage. *Münch. med. Wochenschr.*, 1905, No. 15.

107. HINSBERG. Examination of the ear.

KÜMMEL. Examination of the nose, and examination of the mouth and pharynx. Reprints from *Lehrbuch d. klinischen Untersuchungsmethoden*, Verlag von Urban & Schwarzenberg, Berlin und Wien, etc., 1904.

108. PASSOW. Balneology and ear disease. *Berl. klin. Wochenschr.*, 1905, No. 16.

109. FREY. The influence of the sea climate and sea baths on diseases of the ear. *Wiener med. Presse*, 1904, No. 50.

110. MENDEL. Fibrolysin, a new product of thiosinamin. *Therapeutische Monatshefte*, Feb., 1903.

111. HIRSCHLAND. On the use of thiosinamin in otology and rhinology. *A. f. O.*, vol. lxiv., p. 107.

112. OPPENHEIM. On black bandages. *Deutsche med. Wochenschrift*, No. 12, 1905.

113. GOLDSCHMIDT. To explain the absence of hearing and sight. *Deutsche. med. Wochenschr.*, 1905, No. 12.

114. BRYANT. The value of the present quantitative tests for hearing, with demonstration of a new apparatus. *Medical Record*, April 1st, 1905.

106. On the back surface of the reflector there is a thick plate of glass 15 x 12cm, which covers with the reflector the face of the examining physician. It can be easily removed.

SCHEIBE.

107. These reprints contain a complete description of the methods of examination of the regions in question.

HARTMANN.

108. This is a paper read before the Balneological Congress, in which a brief review is given of the cases in which climate and springs heterotherapy are important factors in the treatment.

MUELLER.

109. In this paper, read before the Society of Balneologists in Abbazia, the author opposes the idea of the danger of sea baths in ear diseases. He believes that a residence near the sea, especially near the Adriatic, is indicated for protracted acute pharyngitis, in congested conditions of the mucous membrane after acute otitis, in scrofulous children who have been operated upon in whom the tendency to heal is slight.

BRUEHL.

110. Thiosinamin is soluble with difficulty. On giving internally, without action, subcutaneous injection causes pain to most patients. The author has therefore produced a double salt and chemical combination of this sinamin and salicylate of soda, and calls this combination fibrolysin, which is supposed not to have the unpleasant features of thiosinamin. As the agent is susceptible to light and air, it is put on the market in little brown ampullæ, each one of which contains a sufficient quantity for one injection. The contents of each ampulla is 0.2 thiosinamin; the ampulla contains 2.3ccm of fluid.

1. Fibrolysin seems to have the same action as thiosinamin, with the following advantages:

2 It can be used subcutaneously, intramuscularly as well as intravenously, without causing the patient any inconvenience.

3. It is readily soluble and consequently is more rapidly absorbed.

4. The production of fibrolysin solution in ampullæ furnishes the cheapest method of using the medicine and at the same time gives an absolute guarantee of its sterility.

HARTMANN.

111. The author has obtained good results with the use of thiosinamin and fibrolysin in several cases of chronic deafness, caused by disturbances of the sound-conducting apparatus. In some the hearing was improved, in others tinnitus was relieved. Only those cases were tried in which other methods of treatment had failed.

In addition to the thiosinamin treatment (intramuscular or subcutaneous injections are the best), the mechanical treatment must be followed. Only straight cases of middle-ear disease are suited, and these only where there is no new formation of bone. The author has also observed good results in stenosis of the auditory canal, adhesions, and scars in the pharynx in ozæna.

HAENEL.

112. The well-known dealer in bandage material, Paul Hartmann, Heidenheim, has succeeded in manufacturing a black gauze bandage in which the color does not fade.

NOLTENIUS.

113. GOLDSCHMIDT attempted to educate a patient fifty-six years of age who suffered from tabes, and had been blind and deaf for ten years, by means of a writing speech in which a mem-

ber of the family would make letters and words on a table with the index finger of the patient. A form of stenography seemed most suited in which the vowels were represented by points, while the consonants were partly written out in full or the characteristic part was made use of. It is remarkable that the plastic writing of the blind, consisting of six points, could not be acquired by the patient.

NOLTENIUS.

114. BRYANT uses the phonograph to reproduce the same sound with the same intensity and pitch. A sound-proof box prevents the escape of sound. A device enables the operator to turn the sound on and off from either ear without the knowledge of the patient. Bryant claims that the amount of sound reaching the patient can be accurately gauged, and at the same time be under the control of the expert. The machine supplies a standard voice test and serves for the comparison of test. The machine could be made uniform. It accurately determines the limit of hearing. It detects feigned deafness, by combining changes in the graduating valve with those in the malingerer's valve. It detects slight loss of hearing as well as hyperacusis. It measures the psychological factor in audition. It measures fatigue of the hearing mechanism. It is an acoustic masseur. Bryant prefers monosyllables to longer words for the phonographic test.

M. TOEPLITZ.

d.—DEAFMUTISM.

115. PANSE. **Four temporal bones of two deaf-mutes.** *A. f. O.*, vol. lxiv., p. 118.

116. BEYER. **The ears of albinotic animals.** *A. f. O.*, vol. lxiv., p. 273.

115. PANSE gives the following results of his examinations :

CASE I. Left : Normal external and middle ear except for a bone necrosis of the posterior branch of the stapes with the oval window. A loosening of the cartilage combining the stapes with the vestibule. Cochlea: Reissner's membrane depressed and adherent to the pars basilaris. The stria vascularis is but little changed. There are several fissures in the ligamentum spirale. Corti's membrane deformed, the usual normal sulcus spiralis is displaced and attached by a layer of cells, the papilla basilaris is degenerated, not a single column is preserved. There are a few cells in the spiral ganglion. The auditory nerve is degenerated. Endarteritis obliterans of the cochlear artery in the auditory nerve.

Right : There is exudate between the neck of the hammer and the drum membrane, bony necrosis of the posterior branch of the stapes, dilated blood-vessels in the oval window and the promontory. The anterior and external ampullæ are distorted. The epithelium shows colloid degeneration. The nerves are atrophied. Endarteritis of the vestibular artery. Colloid degeneration of the macula utriculi, and dilatation of the saccule and degeneration of the epithelium. The saccule and the cochlea distended. Reissner's membrane prolonged. Ligamentum spirale very vascular. Membrane of Corti deformed. Corti's organ perceived in the form of a shallow elevation of atypic cells. The external and internal sulci spirales are normal. In the spiral canal there are only a few ganglion cells.

CASE 2. Right : Middle ear and superior portions normal. Reissner's membrane interrupted, absent in the middle and upper part of the cochlea. Membrane of Corti partly absent and partly deformed. Corti's organ preserved in the middle and in the upper part as an elevation consisting of a colloid mass and atypic cells. The stria vascularis very poor in blood-vessels. The ganglion cells are wanting and the nerve fibres are disintegrated.

Left : Middle ear and superior part normal. Reissner's membrane is partly absent and partly adherent. Corti's membrane is deformed but preserved. Corti's organ consists of an indistinct collection of cells. The stria vascularis shows colloid degeneration without vessels. The spiral ganglion cells are few as are also the auditory nerve fibres.

HAENEL.

116. This is the result of the examination of the temporal bones of two albinotic cats which were practically deaf, and an albinotic deaf dog, which were prepared and preserved directly after death from chloroform. The sound-conducting apparatus and the labyrinth capsule seemed perfectly normal. The upper part of the labyrinth practically intact, the lower part was changed in its form, and its delicate nerve terminals. The epithelium of the maculæ sacculi could hardly be recognized. The otolith membrane was partly disintegrated. The sinus utricularis and ductus reuniens are present as thin fissures. Reissner's membrane is depressed, causing the lumen of the ductus cochlearis to be much narrowed. The stria vascularis absent. The membrana tectoria wedged into the spiral sulcus.

The papilla spiralis consists of a collection of cells. The changes are most marked in the basal pharynx. In the dog every trace of Corti's, Hensen's, hair, and Deiter's cells is absent. That these changes are true degenerative changes, and not an error in the treatment of the specimens is shown by the condition of the spiral ganglion, which was found very atrophic. The conditions coincide with the changes found by Alexander in albino animals.

HAENEL.

EXTERNAL EAR.

117. LEIDLER. On acquired atresia of the external auditory canal. *A. f. O.*, vol. lxiv., p. 254.

118. LAVAL. On regionary anæsthesia of the external auditory canal. *A. f. Q.*, vol. lxiv., p. 142.

117. This is a report on 9 cases of acquired atresia which were operated upon in Politzer's clinic. In 6 there was complete occlusion of the auditory canal, in 2 marked stenosis. The occlusions in 4 were bony, of which one consisted in spongy and 3 in sclerosed bone. The treatment in 7 of the cases was that for the associated chronic purulent otitis, viz., radical operation with Koerner's meatoplasty.

HAENEL.

118. Independently of von Eicken, regionary anæsthesia has been practised in the Halle Clinic by action on the nerves which supply the auditory canal according to the method which Oberst first suggested in the case of the fingers and toes. It is possible to act upon all of the three nerves: the external auditory branch of the auriculo-temporal nerve, the auricular branch of the vagus, and the branch of the great auricular nerve. Generally in operations on the auditory canal anæsthesia is obtained by influencing the first two nerves. The technique is carefully described, during which injuries to neighboring structures should be avoided. The injection fluid used is the tablet containing cocaine and suprarenine of Braun, which is dissolved in $\frac{1}{2}$ ccm of water. The action begins after 5 minutes, and continues for 15 to 20 minutes. Signs of intoxication were never observed. In operations on the auditory canal complete loss of pain can be obtained; in the case of the drum membrane, however, the sensibility is only reduced, as the sensory fibres of the tympanic plexus are not influenced. In extraction of the ossicles the method was not a success. The method has been followed in about 15 cases.

HAENEL.

MIDDLE EAR.

a.—ACUTE OTITIS MEDIA.

119. ESCHWEILER. **The diagnosis and treatment of the acute inflammations of the middle ear.** *Mediz. Klinik*, No. 3, 1905.

120. KONIETZKO and ISEMER. **A case of secondary acute otitis media following an empyema of the antrum of Highmore.** *A. f. O.*, vol. lxiv., p. 592.

121. GERONZI. **A case of paralysis of the abducens nerve of otitic origin.** *Archivio italiano di otologia*, vol. xvi., book 2.

122. FERRERI. **On the lymph vessels which serve as paths of infection for certain otitic complications.** *Archivio italiano di otologia*, etc., vol. xvi., book 2.

123. DE LINS. **Hernia of the tympanum.** *Annales des maladies de l'oreille*, März, etc., 1905.

124. LOMBARD. **On the pathology of mastoiditis.** *Annales des mal. de l'oreille*, März, 1905.

125. SCHÜTZ. **The shortening of the after-treatment of acute mastoid operation by the use of paraffin.** *München. med. Woch.*, 1905, No. 26.

119. This paper is intended for general practitioners. The treatment of acute middle-ear catarrh calls for Politzer's experiment repeated five or six times and insufflations of aristol into the naso-pharynx. In acute otitis media the uninterrupted use of an ice-bag is recommended, no insufflations, the application of heat is contra-indicated. The analgesic instillations are not mentioned. The excellent effect of carbolic-acid glycerine is not recognized. In increasing pain and bulging of the drum, paracentesis is recommended.

HARTMANN.

120. A woman suffering from chronic empyema of the antrum of Highmore died from sepsis. The autopsy revealed a recent suppuration in the ear of the same side, and a connection between the two foci seems to have been given. The infection probably progressed as follows: through the carious posterior wall of the antrum of Highmore into the pterygo-palatine fossa, then through the vidian canal into the venous plexus of the internal carotid, thence to the neighborhood of the Eustachian tube and along the tensor tympani muscle into the tympanum.

HAENEL.

121. Twenty days after the onset of an acute otitis media, the patient, forty years of age, suffered from headache and a paralysis of the abducens nerve on the same side, which disappeared completely after one week. The author believes that abducens paralysis occurs reflexly from the labyrinth, a supposition which

had already been expressed by Moos and Urbantschitsch, and does not agree with Gradenigo's view that a circumscribed, meningitis is the cause.

RIMINI.

122. The author draws attention to a feature which has not received enough attention, that in acute otitis media an inflammation of the soft palate of the mastoid process can result from the extension of purulent germs in the lymph vessels from the tympanum. Two cases are reported in which the mastoid operation was performed but where the mastoid process was found intact.

RIMINI.

123. In acute otitis media the author observed polypoid tumors appearing at the site of perforation in the drum, which he regards as something new. This is certainly the circumscribed hypertrophy of the tympanic mucous membrane which was described by Bezold in 1894, a condition which is better termed a prolapse than a hernia of the tympanic mucous membrane.

BOENNINGHAUS.

124. In pneumatic mastoid processes there is occasionally a bony wall between the antrum and the terminal cells. If this wall be removed aberrant cells appear which extend beyond the sigmoid sulcus and beneath the semicircular canal. In purulent mastoiditis, empyema of these cells, if they are not opened by operation, may lead to serious complications.

BOENNINGHAUS.

125. Three cases with good results.

If in acute purulent otitis the granulations can be followed from the antrum into the tympanum, SCHÜTZ considers it advisable to perform the radical operation. The writer wishes to distinctly oppose this suggestion, because granulations in the aditus and in the tympanum can spontaneously disappear.

SCHEIBE.

b.—CHRONIC PURULENT OTITIS.

126. CHAUVEAU. The influence of vaccination on suppurations of the tympanum and on eczema of the auricle. *Arch. internat. d'otol.*, etc., vol. xix., p. 521.

127. NEUMANN. The technique and indications for extraction of the hammer and anvil. *A. f. O.*, vol. lxiv., p. 167.

128. BEYER. Simulation of a sinus prolapse from isolated caries of the terminal mastoid cells. *A. f. O.*, vol. lxiv., p. 289.

129. ROSSI MARCELLI. A tuberculous polyp of the middle ear. *Archivio italiano di otologia*, etc., vol. xvi., book 5.

130. KLUG. **Suppurations of the labyrinth.** *Annales des maladies de l'oreille*, etc., Feb., 1905.

126. Following vaccination, an otorrhœa which had existed for three years in a patient sixteen years of age ceased without local treatment. The eczema of the auricle was also healed.

OPPIKOFER.

127. The hammer and anvil are extracted in the Vienna ear clinic during local anæsthesia after Neumann's method, which is as follows: Injection of a 1 % cocaine solution with the addition of tonogen under the periosteum of the upper bony canal wall. This procedure suffices to render the drum, tympanum, attic, and antrum insensitive to pain, and anæmic. The operation is performed on the patient sitting upright. To extract the anvil, a small curette bent at an angle of 100° is employed. If the attic extends unusually high up and in the case of a septic suppuration of a cholesteatoma of the attic, as much of the lateral attic wall is chiselled away under local anæsthesia until there is no retention of discharge and the space is accessible to further treatment. The extraction of these two ossicles is performed in all cases of chronic otorrhœa in which the suppuration is localized in the upper tympanic segment, in the attic, or in the antrum, and when no symptoms of an extensive disease of the temporal bone are present, and when conservative treatment followed for weeks and months has remained without avail.

HAENEL.

128. Three years after radical operation, with exposure of the healthy sinus and with normal convalescence, a bluish prominence appeared as large as a bean in the region of the sinus, which was taken for a sinus prolapse because it increased in size on exerting pressure on the jugular region. At operation the sinus wall was everywhere found covered with bone. In the lowest part of the terminal mastoid cells there was a carious focus consisting of granulations whose increase in size on pressure on the jugular vein must be due to the simultaneous pressure of the posterior auricular veins.

HAENEL.

129. A young patient suffering from hip disease in very poor general health presented a polypoid tumor in the left auditory canal. This was removed and upon examination consisted of two parts, a granulating portion under the microscope like tuberculous tissue, and a second part resembling the true neoplasm of connective tissue. Attention is drawn to the rarity of the condition.

RIMINI.

130. This is principally a description of personal cases. Four cases of labyrinth necrosis after scarlet fever which show that the entire labyrinth does not always become necrotic and that the facial nerve is not always affected. The fifth case is interesting: chronic otitis media. Ménière's symptom complex: vertigo, vomiting, and deafness. Then meningeal symptoms. Operation: revealing cholesteatoma. Autopsy: purulent inflammation of the labyrinth with an empyema of the endolymphatic sac as large as a bean. The pus had broken into the labyrinth through the annular ligament. Meningitis.

BOENNINGHAUS.

C.—CEREBRAL COMPLICATIONS.

131. FREY. **Diagnosis and operation of otitic brain abscess.** *Wiener Presse*, 1905, No. 28.

132. SCHMIEGELOW. **On the pathology of otitic brain abscess.** *Arch. internat. d'otol.*, etc., vol. xviii., p. 337.

133. BURGER. **On otitic brain abscess healed by operation.** *Nederl. Tijdschr. v. Geneesk.*, 1904, ii., p. 1480.

134. VILLARD and LECLERC. **An otitic abscess of the temporal lobe.** *Lyon médical*, 1905, p. 373.

135. TÖRNE. **A remarkable case of acute perforative otitis media.** *Hygeia*, 1905, p. 375.

✓ 136. HÖLSCHER. **Otitic diseases of the meninges. II. The diseases in the subdural space and the purulent inflammation of the pia.** *Bresgens Sammlung*, viii., 4/6.

137. DALLMANN. **A case of pneumococcus otitis.** *A. f. O.*, vol. lxiv., p. 147.

138. ALEXANDER. **A case of otitic infectious thrombophlebitis.** *A. f. O.*, vol. lxiv., p. 89.

139. GRUNERT. **On the dangers of the operation on the jugular bulb; the formation of an encephalocele.** *A. f. O.*, vol. lxiv., p. 97.

140. TRONCONI. **On thrombophlebitis of the lateral sinus of otitic origin.** *Archivio italiano di otologia*, etc., vol. xvi., book 5.

131. This paper was read before a society of general physicians and gives the methods by which otitic abscesses of the brain are treated in the Vienna ear clinic.

BRUEHL.

132. SCHMIEGELOW has observed 19 cases of otitic brain abscess, 10 in males, 9 in females; 4 in children, and 15 in adults. In 13 cases the preceding suppuration was chronic and in 6 it was acute. The abscess in 13 cases was situated in the temporal lobe, in 6 in the cerebellum. Recovery in 30%, death in

70 %. The diagnosis and treatment are given and the 19 case-histories are reported, of which 9 have previously appeared.

OPPIKOFER.

133. A girl four years of age was taken ill with a right-sided acute otitis media following an ordinary coryza. The drum perforated spontaneously 6 days after the onset of the ear pain. Three days later there was an epileptic attack with vomiting, the convulsions principally in the left half of the face and the left extremity. These disappeared after a few hours; a transient paresis of the left arm remained. There is nothing else of particular interest. The good health of the child after the attack was undisturbed. There was no tenderness behind the ear, but there was some sagging of the superior canal wall. Mastoid operation: the mastoid process is infiltrated with granulations. The middle cranial fossa is exposed. There is no extradural abscess. The dura is normal and pulsates. The wound is packed with gauze. At first there were no cerebral symptoms but a moderate rise of temperature and a rather slow pulse (88-96). On the 3d day another epileptic attack with vomiting occurred. Second operation: evacuation of a very large abscess filled with fœtid pus in the right temporal lobe. The healing progressed uninterruptedly with drainage.

Of special interest in this case are the occurrence of a brain abscess after an ordinary acute otitis media after coryza; the protracted spontaneous perforation of the drum membrane and the neglected paracentesis; the muco-purulent nature of the tympanic discharge which was without odor, and the intense fœtor of the brain abscess; the rapid development of a large brain abscess with practically no symptoms. Except for the two attacks of convulsions there was no headache, no disturbance of the sensorium, no distinct symptoms of brain pressure, no local brain symptoms, no disturbances of the general condition.

Finally 12 cases of otitic brain abscess are reported which appeared in the literature of the Netherlands, a case of extradural suppuration, abscesses of the temporal lobe and of the cerebellum, a large abscess in the frontal lobe which was first detected at autopsy, 3 cerebral abscesses, 7 abscesses of the temporal lobe. Of the last 10 abscesses, 6 were healed by operation.

BURGER.

134. A left-sided otorrhœa which had occasioned no symptoms for 26 years then suddenly led to somnolence, retarded pulse,

fever, vomiting, and chills. No symptoms characteristic for an abscess of the temporal lobe. At operation, the mastoid process and the posterior cranial cavity, were found normal. On exposing the middle cranial cavity, an abscess of the temporal lobe containing 150g of foetid pus was discovered. Drainage for 6 weeks. Recovery. OPPIKOFER.

135. The patient had suffered previously from a left-sided purulent otitis. He had contracted syphilis 15 years ago. At present there is pain in the left ear. The drum is retracted and red, showing a scar inferiorly. Two days later spontaneous supuration and a perforation in the region of the scar. This was followed by symptoms of retention and the formation of a circumscribed and elastic protrusion in the anterior and upper quadrant of the drum membrane which had to be repeatedly perforated, upon which a few drops of pus escaped. One month after the onset of this attack there was an epileptic seizure, later light amnesic aphasia, ptosis, and tenderness of the mastoid process. Operation on the mastoid process was followed by no improvement, and he died 22 days later. At autopsy an abscess as large as a hen's egg was found in the left temporal lobe; the anterior part of the drum cavity closed off by adhesions, with perforation of the tegmen. JÖRGEN MÖLLER.

136. After an anatomic introduction the author describes lumbar puncture, internal pachymeningitis, subdural abscess, and purulent leptomeningitis. With the aid of personal observations a complete picture of these diseases is given, including the etiology, diagnosis, and treatment. BRÜHL.

137. Bilateral acute purulent otitis, which was followed 7 weeks later by meningitis with an apoplectiform onset, terminating fatally in 24 hours without having previously produced any symptoms on the part of the bone or in the skull. Autopsy revealed extensive bony disintegration in both mastoid processes. Upon perforation of the bone in the sigmoid sulcus and at the superior petrosal sulcus, extradural abscess, extensive leptomeningitis. Pneumococcus was found in pure culture both in the pus of the antrum and in the exudate in the meninges. HAENEL.

138. The patient presented himself three months after the onset of his ear trouble. He had suffered from pain in the ears and head and some deafness. One month after the onset of the suppuration, was operated upon for mastoiditis and subperios-

teal abscess. At this operation, extensive disease of the dura in the middle and posterior cranial cavities, with a fœtid purulent sinus thrombosis, was discovered. This seemed, according to the history, to have caused no fever, no chills, and no metastases. Bacteriological examination revealed Gram-positive diplococci, many with typical capsules. A diplococcus grew in colonies, which was characterized by an unusual mucoid characteristic of the growths in agar, and in other biologic and cultural points resembles the diplococcus of pneumonia. HAENEL.

139. In this case of thrombosis of the jugular bulb, the operation on the bulb was followed by meningeal symptoms due to a disturbance in the circulation. Four weeks after the operation there was a sudden escape of cerebro-spinal fluid from a brain fistula which persisted for six weeks. This curious condition is explained as follows. The disturbance of circulation caused by the operation on the jugular vein and bulb caused areas of softening in the brain; the toxic substances originating in these areas produced a secondary hydrocephalus. This in turn caused necrosis of the cerebellar dura, prolapse of the cerebellum, ventricular fistula, and escape of cerebro-spinal fluid. The case recovered with the persistence of an encephalocele which required a constant pressure bandage. HAENEL.

140. This is a report of a typical case. The operative treatment of lateral sinus thrombosis and especially ligation of the jugular vein are fully discussed. RIMINI.

NERVOUS APPARATUS.

141. RUGANI. A case of paralysis of the left facial and auditory nerves. *Bollettino delle malattie dell' orecchio*, etc., April, 1905, vol. xxiii.

142. POLLAK. Nervous deafness in pulmonary tuberculosis. *Beiträge zur Klinik der Tuberkulose*.

143. CLARKE. On certain symptoms in cerebellar tumors. *The Bristol Med.-Chirurgical Journal*, June, 1905.

141. The patient, two-and-a-half months after a syphilitic infection, was suddenly taken ill with deafness, tinnitus, severe headache, and vertigo. There appeared immediately paralysis of the left facial nerve. With antisyphilitic treatment the disturbances on the part of the ear gradually disappeared and the facial paralysis was completely recovered from. RIMINI.

142. A girl, twenty years of age, who had suffered from childhood from purulent otitis after scarlet fever, became totally deaf

in a few days after hemoptysis without any suggestive noises or symptoms of vertigo. The presumptive diagnosis was bilateral auditory neuritis following tuberculosis. HARTMANN.

143. Two interesting cases are reported in which complete deafness and very distressing tinnitus preceded for a long time the pathognomonic symptoms of a cerebellar tumor.

In two other cases Ménière's attacks were the first symptoms. In most cases optic neuritis is an early sign which can be of aid in the differential diagnosis. CHEATLE.

NOSE AND NASO-PHARYNX.

a.—GENERAL PATHOLOGY.

144. STEVANI. **On disturbances of the stomach and heart of nasal origin.** *Bollettino delle malattie dell'orecchio*, etc., vol. xxiii., No. 7.

144. A patient thirty-two years of age suffered from obstinate dyspepsia, dyspnœa, and severe palpitations of the heart. After the disturbance of nasal respiration caused by a chronic rhinitis had been relieved by proper treatment the gastric and cardiac symptoms were rapidly cured. RIMINI.

b.—OZÆNA.

145. MELZI. **On the treatment of ozæna.** *Arch. internat. d'otol.*, etc., vol. xix., p. 822.

145. Melzi injected paraffin (melting point 50°) with good success in twenty-three patients suffering with ozæna.

OPPIKOFER.

c.—TUMORS.

146. RUTH. **A case of bleeding septal tumor.** *Arch. f. Laryng.*, xvi., No. 3, 1904.

147. IWANOFF. **A case of primary carcinoma of the frontal sinus.** *Arch. f. Laryng.*, xvi., No. 3, 1904.

148. CALAMIDA. **Carcinoma of the sphenoidal sinus.** *Arch. internat. d'otol.*, etc., vol. xix., 385.

146. The tumor presented the histological appearance of an angiosarcoma. ALBANUS.

147. This rare case was a patient seventy-five years of age who observed a swelling at the left inner angle of the orbit after an attack of rhinitis. After examination pus was found under the middle turbinal. The entire extremity was removed and severe hemorrhage occurred. The swelling at the angle of the orbit

disappeared, but returned shortly after and was more pronounced, with pain in the orbit and displacement of the eyeball externally. On inspecting the nose in the region of the upper meatus there was a collection of pus, and in place of the middle turbinal a bleeding fleshy mass was found. A swelling as large as a nut occupied the inner angle of the orbit. The eyeball was displaced out and down.

At operation the frontal sinus was found filled with a pale red glutinous tumor which on removal exposed the dura mater and there was a large opening into the nose. There was a prompt recurrence. Death 8 months after the operation, $1\frac{1}{2}$ years after the first symptoms. No metastases. Microscopically the tumor proved to be a carcinoma.

ALBANUS.

148. Death from marasmus. No meningitis. OPPIKOFEK.

d.—NASAL SEPTUM.

149. SUCKSTORFF. On the submucous resection of the nasal septum. *Arch. f. Laryngol.*, vol. xvi., book 3.

150. KILLIAN. On the submucous resection of the nasal septum. *Arch. f. Laryngol.*, vol. xvi., book 3.

151. HOLSCHER. On operations on the nasal septum, *Württ. med. Korr.-Bl.*, 1905, No. 28.

149. At KILLIAN's instigation, SUCKSTORFF collected and described the various proposals which had been made since Heylen (1847) to correct septum deviations by operation. The best procedure seemed to be Killian's modification (1899) of the Hartmann-Petersen operation.

ZARNIKO.

150. After several historical remarks, the etiology of septal deviations is described, and the indications for their correction given. The author's method of submucous septal resection is then described. The important feature consists in separating the two mucous surfaces of the septum by the aid of a long speculum in which he then can easily work as without the nasal cavity. The entrance into this cavity is furnished by the straight incision which is made at the beginning. All other technical peculiarities group themselves about this fundamental idea.

Every one interested in this operation, which is particularly indispensable to the rhinologist, will derive great profit from studying carefully the suggestions given by the author, which are based upon an experience of 220 cases. The description is facilitated by a number of excellent drawings.

ZARNIKO.

151. The author recommends for septal deviations the resection method of Krieg with the sacrifice of the mucous membrane on the stenosed side. The variation suggested by the writer, of removing the deviated portion of the septum in small pieces instead of removing as large a fragment as possible by two incisions of the scissors, does not appear to the writer to be an improvement.

MÜLLER.

c.—DISEASES OF THE ACCESSORY CAVITIES.

152. GERBER. On the rhinoscopic diagnosis and treatment of maxillary cysts. *Arch. f. Laryng.*, xvi., No. 3, 1904.

153. CHAUVEAU. Syphilitic affections of the frontal and maxillary sinuses. *Arch. internat. d'otol.*, etc., vol. xix., p. 414.

154. WITZEL. Iodoform emulsion for irrigation of the Highmore antrum. *Arch. f. Laryng.* xvi., No. 3, 1904.

155. GAVELLO. On the conservative treatment of chronic maxillary sinusitis. *Archivio italiano di otol.*, etc., vol. xiv., Nos. 2 and 3,

156. BORGONI. Mucocoeles of the maxillary and frontal sinuses. *Giornale italiano di laringologia, otologia e rinologia*, vol. v., No. 1.

157. HERZBERG. On serous meningo-encephalitis of nasal origin. *Berl. klin. Wochenschr.*, 1905, No. 10.

158. BREYRE. The radical cure of chronic frontal sinusitis. *Arch. internat. d' otol.*, etc., vol. xix., p. 429.

159. SEBILEAU. On the surgical treatment of chronic frontal empyema. *Annales des maladies de l' oreille*, etc., Jan., 1905.

160. ONODI. On the endonasal exposure of the sphenoidal cavity. *Arch. f. Laryng.* xvi., No. 3.

161. SCHLUNGBAUM. Sphenoidal cavities of large extent. *Arch. f. Laryng.*, xvi., No. 3.

162. BAUMGARTEN. On diseases of the bony sphenoidal walls. *Arch. f. Laryng.*, xvi., No. 3.

152. Most dentigerous cysts, which include periosteal cysts, or maxillary cysts, extend externally through the facial wall of the superior maxilla, or downwards to the hard palate, or upwards to the floor of the nose, and so may be recognized rhinoscopically by a prominence underneath the anterior insertion of the lower turbinal. The bluish protrusion is generally resilient or fluctuating and may contain normal or other mucous membrane. As to treatment, the smaller cysts should be opened from the nose. When they are larger, the anterior wall of the cysts should be resected and a flap of mucous membrane, with its base at the alveolar process, should be inserted. This formation of flaps is less desirable in empyema of the maxillary antrum when an opening is made from the canine fossa.

ALBANUS.

153. In ten syphilitics chronic suppurations of the accessory cavities were healed without operation by treatment with mercury. The purulent discharge was usually very slight.

OPPIKOFER.

154. Iodoform-alcohol is added to water, thus producing an emulsion of iodoform and water. After repeated irrigations with this fluid the discharge from the Highmore cavity is said to cease after a few days.

ALBANUS.

155. The author describes his favorite method of operation, which is a modified Krause operation. The instrument which is used to perforate the nasal wall of the sinus is described by several drawings.

RIMINI.

156. Two cases which were diagnosticated and operated upon by the author are described. The pathogenesis, diagnosis, and treatment are given.

RIMINI.

157. A driver, thirty-nine years of age, suffered from discharge from the right nose for one year, associated with frontal headache, malaise, indifference, loss of memory. The nose contained polypi and there was a frontal sinus empyema on the right side. After Kuhnt's operation on the frontal sinus all symptoms disappeared until three months later, when severe headache radiated from the scar to both halves of the head. Another operation was performed and a defect was encountered in the internal table of the right frontal sinus. On incising the dura, cerebro-spinal fluid was evacuated under pressure. No symptoms for 14 days. Then without known cause, apoplectiform severe coma, with general convulsions, rigidity of the neck and back, anæsthesia, loss of reflexes, vomiting; pulse and temperature normal. Another operation was immediately performed and the right frontal lobe exposed. The dura was incised and bloody-watery fluid in large quantity evacuated. Various incisions were made into the frontal lobe, which were also followed by the escape of a watery fluid but no pus. Recovery without further symptoms. It was extremely remarkable to the author that the serous meningitis in its double appearance should cause symptoms differing so much in gravity and in kind.

MÜLLER.

158. BREYRE recommends Killian's operation for chronic empyema of the frontal sinus.

OPPIKOFER.

159. SEBILEAU, apparently after a large experience, has come to the conclusion that the obliteration of the frontal sinus, which

is attempted in Kuhnt's and Killian's operation, is not at all necessary for recovery. He operates, consequently, according to Ogston-Luc, by which procedure the forehead retains its normal configuration. He dilates the naso-frontal duct by removing the adjoining ethmoidal cells with a curette. He therefore joins the opposition which is commencing to make itself felt against the general employment of these methods. BOENNINGHAUS.

160. The anatomical relation of the anterior sphenoidal wall to the nasal cavities and to the accessory sinus are given by a number of measurements, and illustrated by instructive drawings. The author distinguishes on the anterior wall of the sphenoidal cavity not only a nasal part and an ethmoidal part, but also a maxillary and a frontal part. The methods of opening the sphenoidal cavity are then described, and the operations which can be carried out on the living are left for a later paper.

ALBANUS.

161. Five sphenoidal cavities are described which show an enormous extension in one or another direction and prove the difficulty of passing a probe into these cavities in the living.

ALBANUS.

162. A case is reported where a syphilitic ulcer behind the nasal septum healed after a course of inunction and iodid of potash, with a perforation of the septum and a large opening into the anterior wall of the sphenoidal sinus. Three cases are also reported of isolated diseases of the wall of the sphenoidal cavities where syphilis could be excluded, in the first case presumably due to arterial sclerosis, in the second to thrombosis or an embolus of the artery in hypoplasia of the aorta, in the last case from an embolic process (disease of the heart).

ALBANUS.

f.—OTHER DISEASES OF THE NOSE.

163. WOLFF. **Hay fever from a clinical, etiologic, and therapeutic point of view.** *Aus der med. Univ. Polikl. zu Berlin.*, Sonderabdruck aus: Senator Festschrift.

WOLFF. **On hay fever and on the proposed investigation of the action of hay-fever serum.** *Berlin. klin. Wochenschr.*, No. 21, 1905.

164. DENKER. **On the treatment of hay fever.** *Münchn. med. Woch.*, 1905, No. 19.

165. URBANTSCHITSCH. **On the treatment of hay fever.** *Münchn. med. Woch.*, 1905, No. 22.

166. CONTE. Tuberculous tumor of the nasal mucosa. *Bollettino delle malattie dell' orecchio*, etc., vol. xxiii., No. 8.

167. STREIT. Contribution on scleroma. *Arch. f. Laryng.*, xvi., No. 3, 1904.

168. GERBER. Remarks as to the preceding article on scleroma. *Arch. f. Laryng.*, xvi., No. 3, 1904.

169. GERBER. Scleroma in the Russian and German Provinces and its treatment. *Samml. klin. Vortr. Chirurgie*, No. 108.

170. HÉLOT. Results obtained from the use of penghawar in certain nasal operations. *Arch. internat. d'otol.*, etc., 1905, vol. xix., p. 798.

171. BOBONE. Total obstruction of the left nose of congenital origin. *Arch. internat. d'otol.*, etc., vol. xix., p. 402.

172. MINZ. Monolateral blindness after injection of paraffin under the skin of the nose. *Chirurgija*, January, 1905.

163. After the careful investigations of WOLFF with Dunbar's (Pollantin) and Weichardt's (Graminon) serum, their activity is not to be regarded as antitoxic. The author concludes as follows:

Pollantin and Graminon are substances which attenuate the action of the pollen endotoxin in patients suffering from hay fever.

This attenuation takes place during and outside of the true hay-fever time.

The action is favorable if the specimens are used prophylactically before the entrance of the pollen endotoxin.

The action of the sera is not to be placed as a parallel one to an antitoxin. There is, in fact, no satisfactory explanation of the serum.

HARTMANN.

164. DENKER has treated 8 cases of hay fever with massage of the nasal mucous membrane and has obtained good results. In 6 cases the attacks in the following years were milder or were absent. He believes that the massage, which was practised daily from 2 to 4 minutes, reduces the sensitiveness of the mucous membrane.

In 3 short cases of hay fever Denker tested Dunbar's toxin for its differential diagnostic importance, and employed it during the period free from attacks, but was not able to bring on an attack. Denker is going to continue these experiments with a more recent toxin.

SCHEIBE.

165. URBANTSCHITSCH has obtained good results with massage in hay fever.

SCHEIBE.

166. This paper gives an histological report of a case of tuberculous tumor of the nasal mucous membrane with a review of similar cases described in literature.

RIMINI.

167. The author was able to examine for scleroma 150 to 200 cases living in the counties of Oletzko and Lyck in East Prussia. Two certain recent cases of scleroma were discovered with typical histological conditions. The first one presented the picture of chronic rhinitis, and can therefore be regarded as a rhinitis scleromata. In a third case, which appeared clinically as ozæna, the histological changes characteristic of scleroma were only to be found in the epithelium. The author cannot definitely state whether this case is to be regarded as scleroma or not. The interesting histological peculiarities must be read in the original. The author believes that all cases of scleroma should be announced. The two German areas of scleroma in Upper Silesia and Masuria should be placed under the control of special physicians, and should be visited by a medical commission every two or three years. Those patients who require hospital care should be admitted only to the special hospitals in Königsberg and in Breslau.

ALBANUS.

168. The writer replies to Streit, who has objected to a case of scleroma published by the writer, that scleroma can be and must be diagnosticated from certain clinical conditions even without a positive histological condition.

ALBANUS.

169. The author again draws attention to the importance of the proper diagnosis of scleroma in the Russian and German adjoining counties, because cases of scleroma are repeatedly appearing in East Prussia which probably derived their origin from an infection from Russia. This fact, which apparently is proven, shows the necessity that cases of scleroma should be observed, and that a quarantine should be instituted. A short diagnosis of scleroma with very good illustrations is added.

BRÜHL.

170. In place of packing HÉLOT recommends penghawar after intranasal operations. The reviewer has also been using this remedy for one year, but does not feel inclined to give preference to it, especially for patients who are treated in the out-patient department. Penghawar is pleasanter for the patient; it, however, protects less securely than the packing against the unpleasantness or danger of an after-hemorrhage.

OPPIKOFER.

171. In a girl nineteen years of age the left choana was completely occluded by a bony cyst at the posterity extremity of the lower turbinal. At operation two tablespoonfuls of a yellowish thick fluid without odor were evacuated from this cyst. Recovery.

OPPIKOFER.

172. Three minutes after the injection of $\frac{1}{2}$ gram of paraffin (melting point 43°), in the case of a young woman of twenty-five with a syphilitic depressed nose, sharp pain set in in the left eye and the sight was lost. Pulse 48; vomiting. With the ophthalmoscope no arterial embolus could be observed. Shortly after œdema of the lids, exophthalmos, and in the dorsum of the nose there were two thrombosed areas. The termination in complete blindness of the left eye is described by the author as a thrombosis of the nasal veins which was transmitted by anastomoses to the ocular veins. It should be mentioned that the same patient a short time before had received an injection of an entire gram of paraffin at the same melting point without injurious results.

SACHER.

g.—NASO-PHARYNX.

173. HOLZ. Recovery of two cases of bilateral exophthalmos and one case of chorea by removal of adenoid vegetations. *Berl. kl. Wochenschr.*, 1905.

174. KREBS. The after-treatment of adenectomy. *Zentralbl. f. Kinderheilk.*, book 6.

175. ZWILLINGER. Latent tuberculosis of the hyperplastic pharyngeal tonsil. *Arch. internat. d'otol.*, etc., xix., p. 370.

173. (1) A boy seven years of age with adenoid vegetations and double-sided exophthalmos (presumably Graves' disease without cardiac or thyroid lesions). Ten days after the adenoids had been removed the exophthalmos disappeared. The adenoid vegetations recurred two years later with exophthalmos, which again disappeared after removal of the vegetations.

(2) A boy seven years of age with hyperplasia of all the three tonsils, bilateral exophthalmos (Graves' disease). Tonsillotomy exerted no influence on the exophthalmos, which did not disappear until two weeks after the adenoids were removed.

(3) A boy seven years of age with adenoid vegetations and chorea minor of several weeks' existence. The latter condition cured by adenectomy.

MÜLLER.

174. In the after treatment the author lays weight on medication with ferric iodid.

BRÜHL.

175. In thirty pharyngeal tonsils the author was unable to find tubercle bacilli or characteristic tuberculous changes in a single case. Animal experiments also resulted negatively. He therefore concludes that latent tuberculosis of the pharyngeal tonsil is rare and that the percentage of 4.2 of Gradenigo is too high.

OPPIKOFEK.

MOUTH AND PHARYNX.

176. TRAUTMANN. Two additional cases of so-called gland fever. *Münchn. med. Wochenschr.*, 1905, No. 23.

177. LÖHNBERG. On the diagnosis of gummatous tumors of the soft palate. *Arch. f. Laryng.*, xvi., No. 3, 1904.

178. SCHMITZ. On retropharyngeal abscess of small children. *Protokolle des Vereins St. Petersburger Ärzte*, Sitzung. vom 16 Nov., 1904.

176. Two cases of pharyngeal angina, which were not quite straightforward, as the first was complicated with a faucial angina and the second with bronchitis. The author draws attention to the fact that in inflammations of the pharyngeal tonsil the glands of the neck are first involved and not the glands of the jaw.

He has recently examined children suffering with adenoid vegetations for the presence of this so-called one-day fever, and was able to confirm its presence in many cases. These attacks of fever generally disappear after removal of the pharyngeal tonsil.

SCHEIBE.

177. A patient seventy-three years of age, who has become emaciated on account of difficulty in taking his food, suffered for several months from pain in swallowing. An elastic smooth tumor, as large as a hen's egg, starting from the left tonsil, completely occluded the isthmus of the fauces. There were no glandular swellings. On incision a discolored fluid was evacuated. Prompt recovery after iodid of potash. The histological examination of an excised piece of tissue showed lymphatic tissue, granulation tissue, and necroses.

ALBANUS.

178. This trouble originates in primary lymphadenitis. The paths which lead to this lymphatic gland may start from the nose, from the pharynx, or from the middle ear. Fifty cases are reviewed. Most of these occur during the first year. The youngest patient was four months old; only one patient had reached the age of three years. The causation appears to be a coryza, an otitis media, or an angina; occasionally traumatism is given as

the cause. The prognosis, on evacuating the abscess at the proper time, is good. Of these fifty cases five died.

SACHER.

BOOK REVIEWS.

1.—The Surgical Treatment of Chronic Suppuration of the Middle Ear and Mastoid. By SEYMOUR OPPENHEIMER, M.D., New York. With forty-six half-tone plates. Large octavo ; four hundred and twenty-five pages. Cloth, \$6.00. P. Blakiston's Son & Company, Philadelphia, 1906.

This is an exhaustive and elaborate treatise on the subject of chronic purulent otitis in all of its phases. In addition to chapters on the normal anatomy and pathology, the greater part of the book is devoted to treatment. The usual operations, with their indications and after-treatment, are fully described in the order of their importance, from paracentesis of the drum membrane to the so-called "radical operation."

The treatment of the subject is novel and unquestionably a great deal of information has been industriously collected. The literature is carefully considered, but exact literary references are omitted.

It occurs to the reviewer that the book would be improved if the author's style were more terse and the contents divided into paragraphs with headings and with the employment of large and small type. The more important features would then receive the proper emphasis, and reference to them would be facilitated, though the latter condition is partly met by an excellent index.

A. K.

MISCELLANEOUS NOTES.

Professor Passow of the Charité Ear-Clinic, Berlin, has succeeded Professor Lucae, retired, as director of the University Ear-Clinic, Ziegelstr., Berlin.

Professor Heine, formerly 1st assistant at the University Ear-Clinic, Berlin, has accepted the call to Königsberg as extraordinary Professor of Otology.

Professors Bezold (Munich), Leutert (Giessen), Denker (Erlangen), have all been appointed full Professors of Otology.

The German Otological Society meets in Vienna, June 1st and 2d.

The Twelfth Annual Meeting of the American Laryngological, Rhinological, and Otological Society will be held, under the Presidency of Dr. Jas. E. Logan, at Kansas City, Mo., on Monday, Tuesday, and Wednesday, June 11, 12, and 13, 1906.

The Thirty-ninth Annual meeting of the American Otological Society will be held, under the Presidency of Dr. E. Gruning of New York, at the N. Y. Academy of Medicine, 17 West 43d St., New York City, on Tuesday, June 26, and Wednesday, June 27, 1906, at 10. A. M.

